

SONY



V10099

CAMELA CONTROL UNIT

CCU-M5P

SERVICE MANUAL



SAFETY RELATED COMPONENT WARNING

Components identified by shading and  marked on the schematic diagrams and parts list are critical to safe operation. Replace these components with SONY parts whose part numbers appear as shown in this manual or in supplements published by SONY.

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SECTION1

GENERAL

Overview

The CCU-M5/M5P is a camera control unit designed for the Sony video cameras such as the DXC-325/325P, DXC-327/327P, DXC-327A/327AP, DXC-537/537P, DXC-930/930P, DXC-3000A/3000AP, or DXC-M7/M7P. Various adjustment functions of the camera can be remotely controlled from a location 300 meters apart in maximum with this unit. It is especially convenient for program production using a recording system with two or more video cameras.

Features

Remote control capability for various adjustments

The unit allows remote control of the adjustments required for camera recording, such as automatic and manual adjustments of white balance, such as automatic and manual adjustments of white balance, black balance and lens iris, gain selection of the video amplifier and pedestal level control, etc. Also the knee adjustment function provide high-quality pictures under various shooting conditions.

Connections with various types of cameras and video equipment

Besides the output for the conventional composite video signal (VBS), this unit is equipped with outputs for a component video signal and S-video signal to provide superior picture quality corresponding to many picture systems. Also, the RGB signal outputs allow a chroma keyer and an RGB monitor to be connected. For connecting a video camera, two types of connectors, 14 pin and 26 pin, are included for various types of cameras.

Gen-lock function

The gen-lock function enables video cameras to be synchronized with an external reference signal. When using multiple video cameras, all the cameras can be synchronized with the same reference signal. The SC and H phase differences between the gen-lock reference signal and the output signal can be adjusted.

Built-in cable compensator

This unit can compensate for the transmission loss from high-frequency components and the output level decrease caused by camera cable extensions up to 300 m. The compensation level for composite video signals (VBS) can be independently fine-adjusted for the luminance signal and the chrominance signal.

Return video

The return video signals from a special effects generator or a control console can be monitored in the viewfinder of a camera.

Tally/intercom function

Communication among the operators of this CCU, the video camera and the control console is supported by the tally/intercom functions. This unit is equipped with two tally intercom connectors to accept various intercom systems.

Detail correction

Thanks to the built-in detail correction circuit, the contours of objects can be sharpened or softened as desired.

Clear Scan™ function (available on the DXC-930/930P only)

The Clear Scan function decreases the slant noise when you are shooting a computer screen using a video camera.

Built-in electric shutter control

The built-in shutter controller enables the unit to produce clear images even when objects are moving at very high speeds. By selecting an appropriate shutter speed, clear still pictures and slow motion pictures can be obtained on playback.

Character display functions

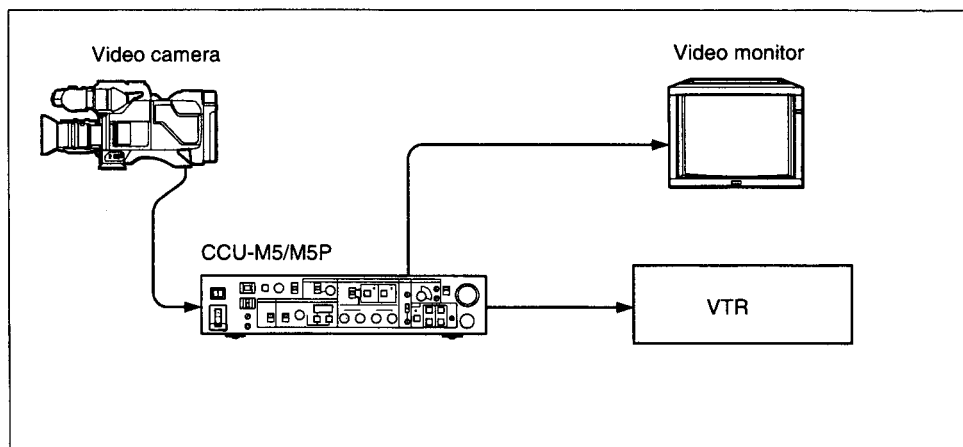
Using the character display functions, the adjustment items and their current values are displayed on the monitor screen.

Rack mounting

The unit can be mounted in a 19-inch standard rack.

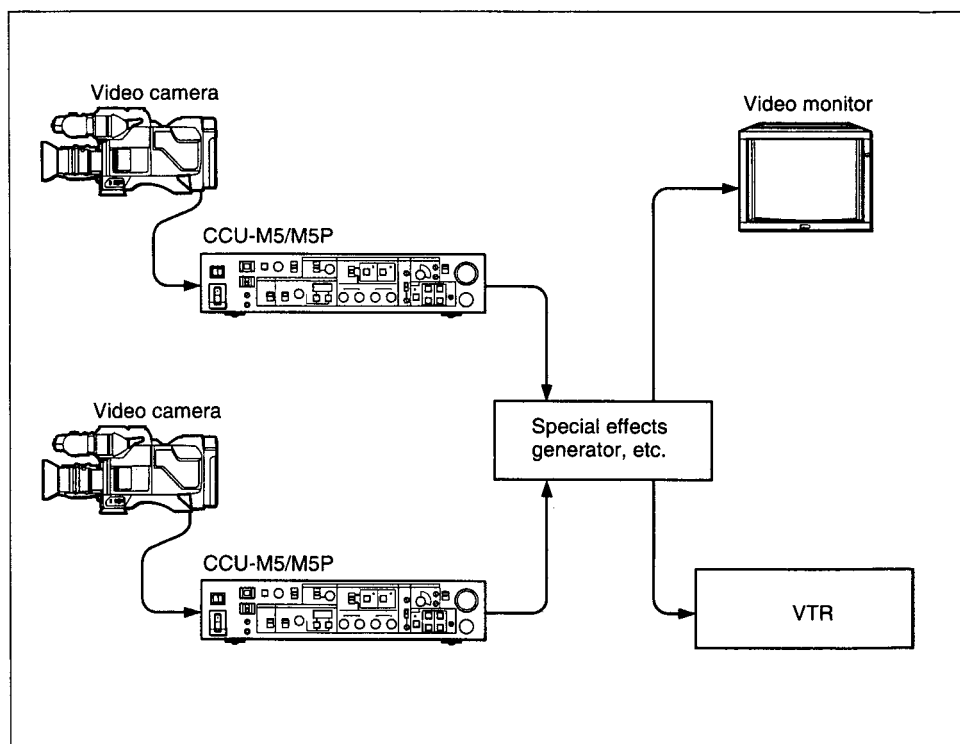
System Examples

System controlling a single camera



System controlling a single camera

System for controlling two or more cameras



System for controlling two or more cameras

Functions Using the CCU-M5/M5P

Output signals

Output signals

Camera or camera adaptor	Output signal			
	VBS	RGB	S-video	Y/R-Y/B-Y
DXC-537/537P with CA-537/537P	Yes	Yes	Yes	Yes
DXC-327A/327AP with CA-537/537P	Yes	Yes	Yes	Yes
DXC-M7/M7P	Yes	Yes	Yes	Yes
DXC-537/537P with CA-327/327P	Yes	Yes	No	No
DXC-327/327P/327A/327AP with CA-327/327P	Yes	Yes	No	No
DXC-325/325P with CA-325/325P	Yes	Yes	No	No
DXC-3000A/3000AP	Yes	Yes	No	No
DXC-930/930P	Yes	Yes ^{a)}	Yes ^{b)}	No

a) When the CCTZ-3RGB or CCTQ-3RGB camera cable is used.

b) When the CCTZ-3YC camera cable is connected.

Items that may be adjusted

Adjustable items

Cameras	Items to be adjusted			
	Detail	Shutter speed	Clear scan	Knee point
DXC-537/537P	Yes	Yes	No ^{a)}	No ^{b)}
DXC-327A/327AP	Yes	Yes	No	No ^{b)}
DXC-327/327P	Yes	Yes	No	No
DXC-M7/M7P	Yes	Yes	No	Yes
DXC-325/325P	No	No	No	No
DXC-3000A/3000AP	No	No	No	No
DXC-930/930P	Yes	Yes	Yes	No

a) The Clear Scan function can be controlled on the camera.

b) The figures displayed on the monitor screen change but adjustments cannot be made.

Length of camera cables

When the CCZ-An camera cable is used

When an optional CCZ-An (n means the cable length) camera cable is used, the cable can be extended up to 300 meters (999 feet). How much the cable length can be extended depends on the equipment used in combination and the type of a cable. To extend the cable, set the CABLE COMP switch to the appropriate position according to the length of the cable to be used.

To supply power to the camera from the CCU-M5/M5P:

When the CCZ-An camera cable is used and the power is supplied through the CCU, the maximum cable length is as shown in the table below.

Maximum cable length

Viewfinder	Video camera			
	DXC-537/ 537P	DXC-327A/ 327AP	DXC-M7/ M7P	DXC-930/ 930P
DXF-50/50CE	150 m	150 m	100 m	—
DXF-501/501CE, DXF-M7/M7CE	200 m	200 m	150 m	—
Not used	250 m	250 m	150 m	300 m

To supply power to the camera from an independent power source:

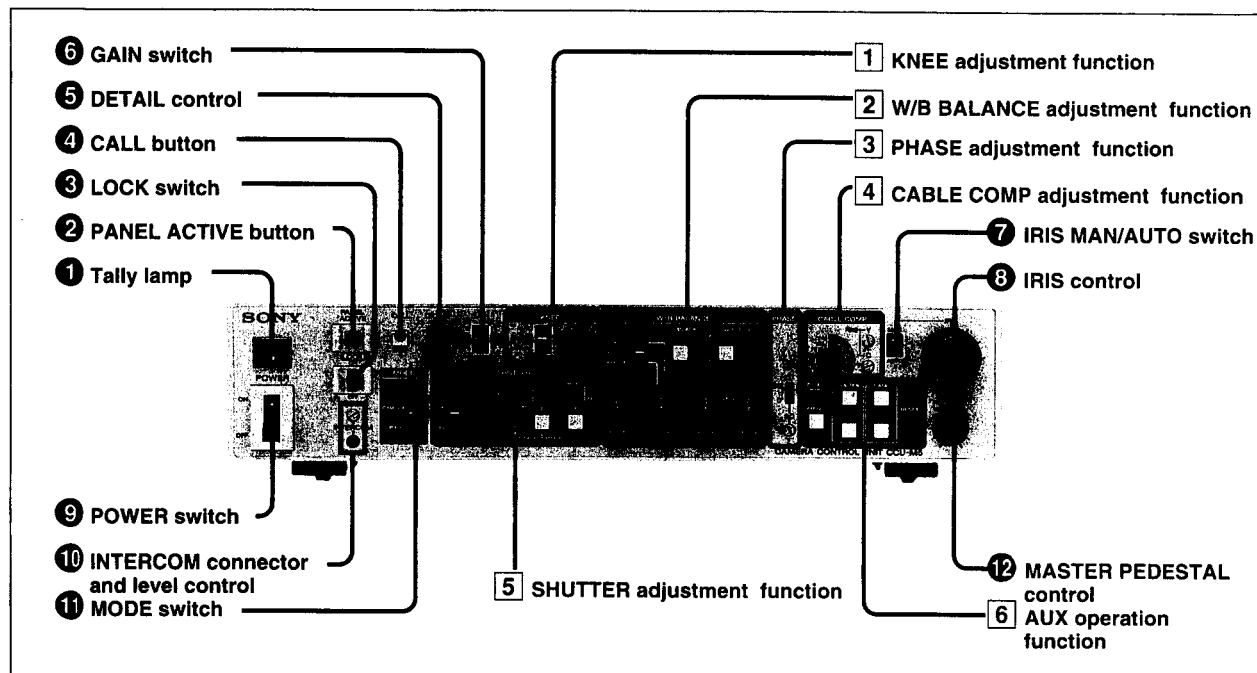
When the CCZ-An camera cable is used and the power is supplied from separate power source, the camera cable can be extended up to 300 meters.

When the CCQ-nAM camera cable is used

When the CCQ-nAM camera cable is used, the maximum cable length is 100 meters.

Location and Function of Parts

Front Panel



Front panel

1 Tally lamp

This lamp lights up when the video camera connected to this unit is selected on the control console or the SEG-2550A/2550AP special effects generator, indicating that what the camera is shooting is being recorded. This lamp also lights up when the CALL button on the camera or CCU is pressed.

The indication number on the lamp can be changed by using the supplied sheets.

2 PANEL ACTIVE button

When the video camera connected to this unit is controlled by multiple devices such as the RM-M7G remote control unit, press this button so that it lights, enabling this unit to control the camera. While this button is lit, the control-panel switches, buttons and control knobs of this unit are operative.

When the PANEL ACTIVE button of another device is pressed, the light of the button of this unit goes out and the unit's control over the camera is canceled.

3 LOCK switch

ON: The settings of the switches, buttons and control knobs on the panel except the CALL button, INTERCOM control and CABLE COMP FINE controls are maintained. This prevents the settings from being changed inadvertently after the adjustments are completed.

OFF: Normally set to this position. The video camera can be controlled by this unit.

4 CALL button

Press this button to call the camera operator. While this button is pressed, the tally lamps in the camera's viewfinder and on this unit will light.

5 DETAIL control

This control compensates the contours of objects. Turn the control to obtain the desired contours.

6 GAIN switch

This switch selects the amplification gain of the video signal.

Normally set the gain to 0 dB. When the lighting on subjects is low, set the switch to 9 dB or 18 dB.

⑦ IRIS MAN/AUTO switch

This switch selects the iris control mode, manual or automatic when the IRIS select switch on the lens is set to AUTO.

MAN: The iris can be manually adjusted with the IRIS control ⑧. For manual adjustment, set the IRIS selector on the camera.

AUTO: The iris is automatically adjusted to the optimum value.

⑧ IRIS control

This control adjusts the iris when the IRIS MAN/AUTO switch ⑦ is set to MAN. The iris can be adjusted continuously over the full range from "open" to "close."

When the IRIS MAN/AUTO switch is set to AUTO, this control performs fine adjustment of the automatically-adjusted iris.

⑨ POWER switch

ON: When the ON side is pressed, the power is turned on.

OFF: When the OFF side is pressed, the power is turned off.

⑩ INTERCOM connector (minijack) and level control

Connect a headset such as a DR-100A to this connector. Then the CCU operator can talk to the camera operator or the control console operator. The sound volume of the headset can be adjusted by turning the control with a small screwdriver.

⑪ MODE switch

This switch selects the signal to be output from this unit.

CAMERA: To output the signal from the camera

BARS: To output the color-bar signal

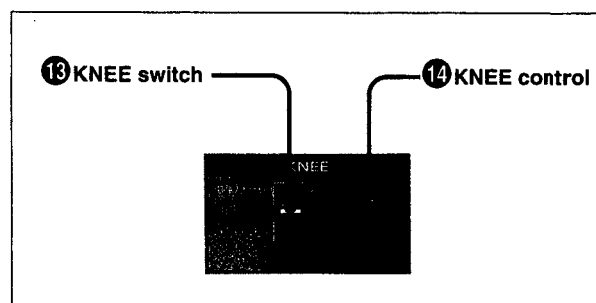
⑫ MASTER PEDESTAL control

This control adjusts the pedestal level (black level) of the video signal.

1 KNEE adjustment function

Note

The KNEE adjustment function is enabled only when the DXC-M7/M7P is connected.



KNEE adjustment function

⑬ KNEE switch

AUTO: The auto knee circuit is activated. The circuit automatically adjusts the knee point to the optimum level to avoid clipping of bright parts under bright lighting.

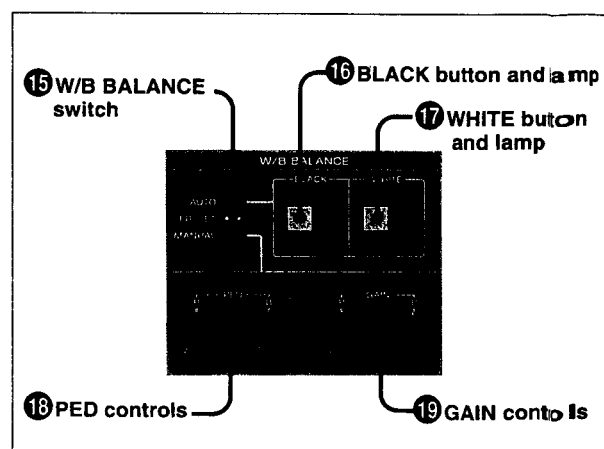
PRESET: The knee circuit works for the preset knee point.

MANUAL: The knee point can be adjusted manually by using the KNEE control ⑭

⑭ KNEE control

This control is activated when the KNEE switch ⑬ is set to MANUAL, enabling manual adjustment of the knee point.

2 W/B BALANCE adjustment function



W/B BALANCE adjustment function

15 W/B BALANCE (white balance and black balance) switch

AUTO: White balance and black balance are automatically adjusted with the WHITE button 17 and BLACK button 16. The adjusted values are stored in the memory in the camera head. The stored values are retrieved automatically when the switch is set to this position, and the camera operates.

PRESET: The camera operates with the preset values, i.e., white balance adjusted for iodine lamps (color temperature 3200K) with the FILTER selector of the camera set to 1. When there is no time to adjust the white balance, set the switch to this position.

MANUAL: White balance and black balance can be manually adjusted with the GAIN controls 19 and PED controls 18.

16 BLACK (black balance adjustment) button and lamp

For automatic black balance adjustment, push this button after setting the W/B BALANCE switch 15 to AUTO or PRESET. When the adjustment is completed, the lamp lights and it goes out after about five seconds.

17 WHITE (white balance adjustment) button and lamp

For automatic white balance adjustment, push this button after setting the W/B BALANCE switch 15 to AUTO. When the adjustment is completed, the lamp lights and it goes out after about five seconds.

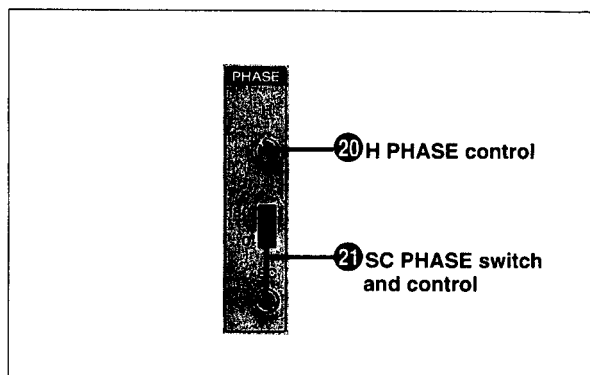
18 PED (pedestal level) controls

These controls manually adjust the pedestal level when the W/B BALANCE switch 15 is set to MANUAL. The R control adjusts the red component and the B control adjusts the blue component.

19 GAIN (video gain) controls

These controls manually adjust the video output level when the W/B BALANCE switch 15 is set to MANUAL. The R control adjusts the red component and the B control adjusts the blue component.

3 PHASE adjustment function



PHASE adjustment function

20 H PHASE (horizontal phase) control

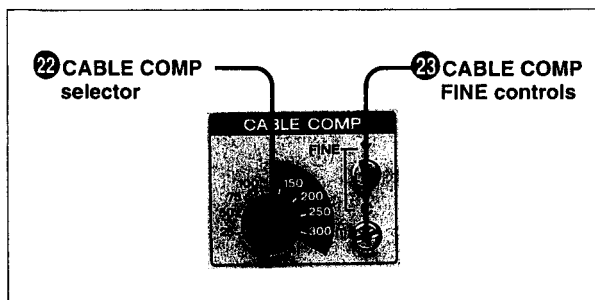
This control adjusts the horizontal phase difference between the external sync signal and the output signal.

21 SC PHASE (subcarrier phase) switch and control

This switch and control adjust the subcarrier phase difference between the external sync signal and the output signal.

Set the switch to the appropriate position, then turn the control with a screwdriver for fine adjustment.

4 CABLE COMP adjustment function



CABLE COMP adjustment function

22 CABLE COMP (cable compensation) selector

Set this selector according to the length of the camera cable being used. The cable compensator performs compensation according to the selected cable length to eliminate signal degradation.

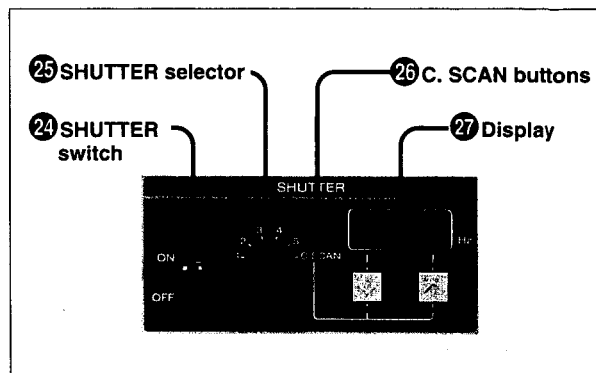
23 CABLE COMP FINE (cable compensation fine adjustment) controls

These controls are for fine adjustment of the cable compensation level of the video signal supplied from the VBS OUT connectors.

After setting the CABLE COMP selector 22 according to the length of the cable being used, turn these controls with a screwdriver if fine adjustment is required. The Y control adjusts the Y (luminance) signal level and the C control adjusts the C (chrominance) signal level.

Use a waveform monitor and a vectorscope when doing the adjustments.

5 SHUTTER adjustment function



SHUTTER adjustment function

24 SHUTTER switch

ON: The built-in electric shutter is activated.

OFF: The shutter is deactivated.

25 SHUTTER selector

When the built-in electric shutter is used, select the shutter speed with this selector.

SHUTTER selector setting

SHUTTER selector setting	Shutter speed
1	1/100 sec. for the NTSC model 1/60 sec. for the PAL model
2	1/250 sec.
3	1/500 sec.
4	1/1000 sec.
5	1/2000 sec.
C. SCAN	To activate the Clear Scan function

26 C. SCAN (Clear Scan) buttons

When the SHUTTER selector 25 is set to C. SCAN, press these buttons to obtain the adjusted value for the least noise. The adjusted value appears on the display 27.

Note

The Clear Scan function is activated only when the DXC-930/930P is connected.

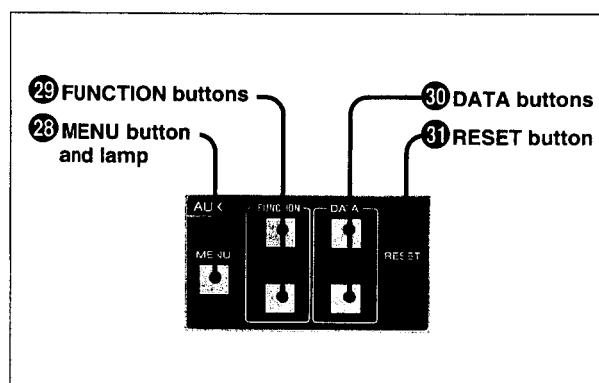
27 Display

The values set with the SHUTTER selector 25 and C. SCAN buttons 26 are displayed here. When the electric shutter is not used, OFF appears.

6 AUX operation function

Note

The FUNCTION, DATA and RESET buttons are activated only when the DXC-930/930P is connected.



AUX operation function

28 MENU button and lamp

When this button is pressed, the current settings on the front panel appear on the monitor screen connected to the MONITOR OUT connector.

When this button is pressed again, the displayed characters disappear.

When the DXC-930/930P is connected, pressing this button lights the MENU lamp, and the items adjusted with the FUNCTION, DATA and RESET buttons appear on the monitor screen. Pressing this button again makes the MENU lamp go out, and the current settings on the front panel appears. To make the displayed characters disappear, press this button once more.

29 FUNCTION buttons

When these buttons are pressed, the arrow on the menu which appears by pressing the MENU button

28 moves up and down. Use this button to select the item to be adjusted.

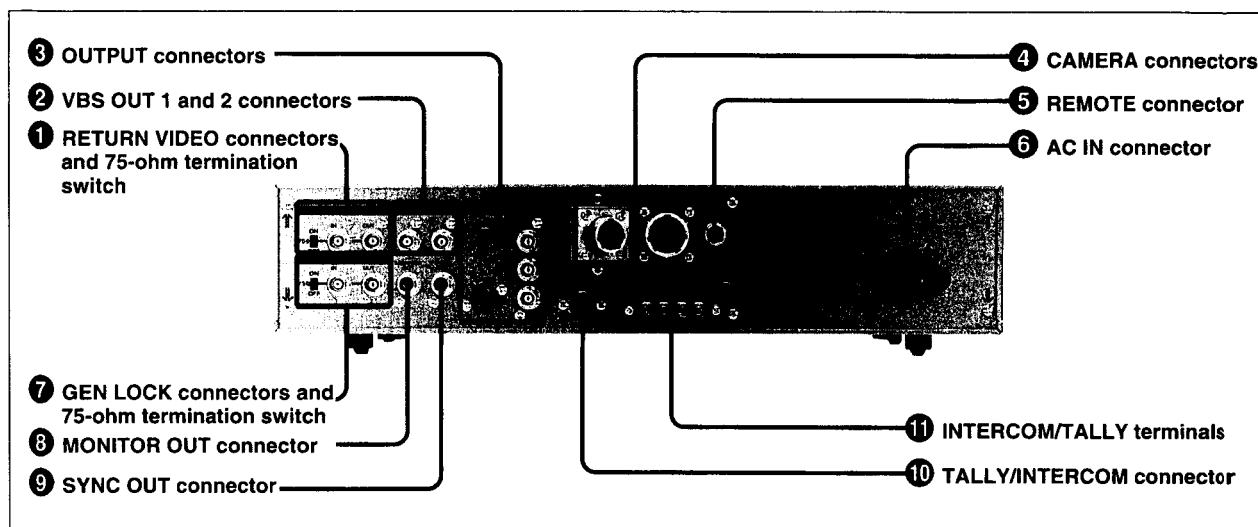
30 DATA buttons

When these buttons are pressed, the setting for the item selected with the FUNCTION button 29 changes.

31 RESET button

When this button is pressed, the settings on the menu are changed to the preset ones (the status set at the factory).

Rear Panel



Rear panel

① RETURN VIDEO connectors (BNC type) and 75-ohm termination switch

These connectors accept the output signal from a control console or a special effects generator to feed the on-the-air signal or the signal being recorded to the viewfinder of the camera.

IN (input) connector

Connect to the program output connector of a control console or a special effects generator.

OUT (output) connector

The signal supplied to the IN connector is directly output from this connector. To feed the return video signal to another video unit, connect this connector to the return video input of the video unit.

75-ohm termination switch

When only the IN connector is used, set this switch to ON. When both the IN and OUT connectors are used, set it to OFF.

② VBS OUT (video signal output) 1 and 2 connectors (BNC type)

These connectors feed out composite video signals (VBS: Video, Burst, Sync). Connect to the video input connectors of video equipment such as a VTR or a special effects generator, etc. The same signal is fed out from the both connectors.

③ OUTPUT (video signal output) connectors

S VIDEO connector (mini DIN 4-pin)

This connector feeds out S video signals when the video output signal select switch is set to S VIDEO. Connect with a VTR or a video monitor which can process the S video signals.

R/R-Y, G/Y, B/B-Y connectors (BNC type)

These connectors feed out the R, G, B color signals or the R-Y, Y, B-Y component signals according to the setting of the video output signal select switch. Connect these connectors to the appropriate connectors of a VTR having input connectors for component signals.

Video output signal select switch

This switch selects the signals to be fed out from the OUTPUT connectors.

RGB: The R, G, B color signals are fed out from the R/R-Y, G/Y, B/B-Y connectors respectively.

The signal is not output from the S VIDEO connector.

R-Y/Y/B-Y: The R-Y, Y, B-Y component signals are fed out from the R/R-Y, G/Y, B/B-Y connectors respectively.

The signal is not output from the S VIDEO connector.

S VIDEO: The signal is fed out from the S VIDEO connector.

The signals are not output from the R/R-Y, G/Y, B/B-Y connectors.

④ CAMERA connectors (Q-type 14-pin, Z-type 26-pin)

Connect one of these connectors with a video camera. To connect a camera with the 14-pin connector, connect the 14-pin connector using the CCQ-AM camera cable: To connect a camera with the 26-pin connector, connect the 26-pin connector using the CCZ-A camera cable.

⑤ REMOTE connector (10-pin)

Connect the RM-M7G remote control unit.

⑥ AC IN connector

Connect to an AC power source using the supplied AC power cord.

⑦ GEN LOCK connectors (BNC type) and 75-ohm termination switch

These connectors are for a sync signal.

IN (input) connector

This connector accepts a reference black burst signal or a composite video signal (VBS: Video, Burst, Sync) to synchronize the camera with an external sync signal.

When no signal is input to this connector, the video camera operates in the internal sync mode.

OUT (output) connector

The signal supplied to the IN connector is directly fed out from this connector. To synchronize another camera or video unit with the same reference signal, connect this connector to the reference signal input connector of that device.

75-ohm termination switch

When only the IN connector is used, set this switch to ON. When both the IN and OUT connectors are used, set it to OFF.

⑧ MONITOR OUT connector (BNC type)

This connector feeds out the composite video signals to be monitored.

When the MENU button on the front panel is pressed, information displayed as characters on the setting status of the front panel can be added to the video signals. Connect to the video input connector on a video monitor.

⑨ SYNC OUT (sync signal output) connector (BNC type)

This connector feeds out a sync signal from a camera. Connect to the sync signal input connector of an RGB monitor.

⑩ TALLY/INTERCOM connector (DIN 4-pin)

Connect the tally/intercom signals to enable the CCU or control console operator and the camera operator to communicate with each other. Connect to the TALLY/INTERCOM connector on a control console or a special effects generator using a CCDD cable (optional).

⑪ INTERCOM/TALLY terminals (screw terminal)

Connect to an intercom system which cannot be connected to the TALLY/INTERCOM connector ⑩.

Preparations

Precautions

On safety

- Operate the unit only with a power source specified in the “Specifications” section.
- Should any solid object or liquid fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Unplug the unit from the wall outlet if it is not to be used for an extended period of time. To disconnect the cord, pull it out by the plug. Never pull the cord itself.

On installation

- Allow adequate air circulation to prevent internal heat buildup.
- Do not install the unit near a heat source such as a radiator or an air duct, or in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
- Keep the unit away from equipment with strong magnets as for example a large speaker.

On operation

When the unit is not in use, turn the power off.

On cleaning

Clean the cabinet, panel and controls with a dry soft cloth, or a soft cloth lightly moistened with a mild detergent solution.

Do not use any type of solvent, such as alcohol or benzine, which might damage the finish.

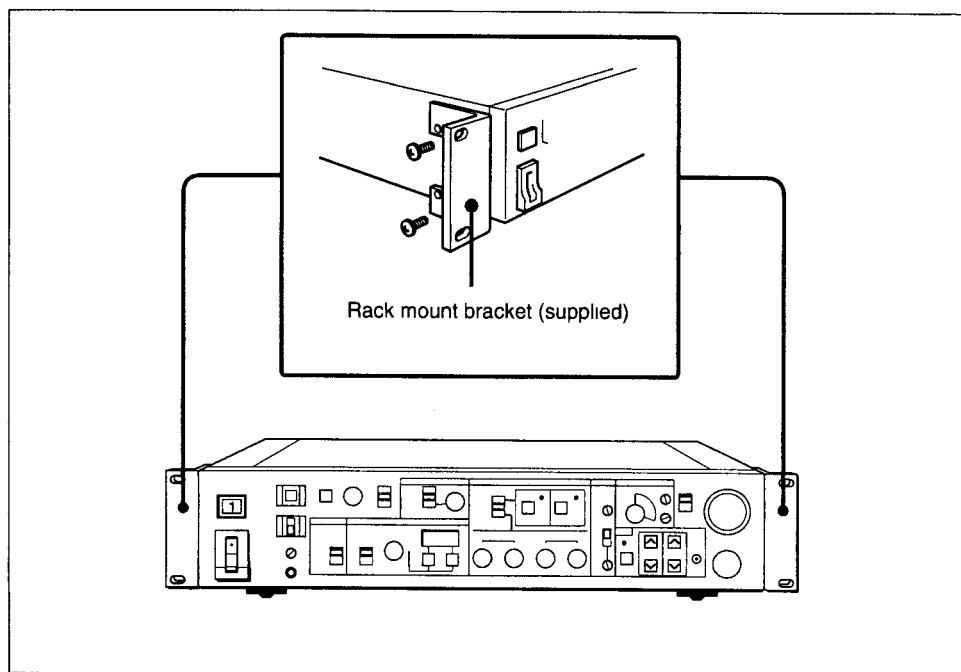
On transportation

Save the original carton and associated packing material.

They will be useful should you have to transport or ship the unit.

Rack Mounting

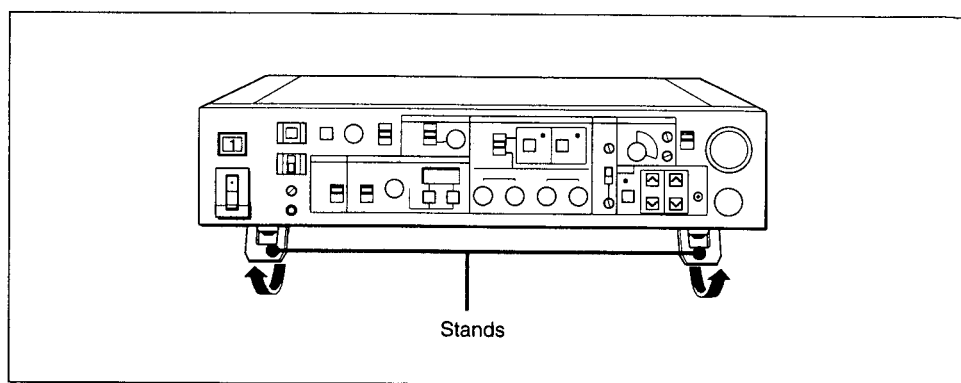
When the rack mount brackets (supplied) are attached to the CCU-M5/M5P, the unit can be mounted in a 19-inch standard rack.



Rack mounting

How to Use the Stands

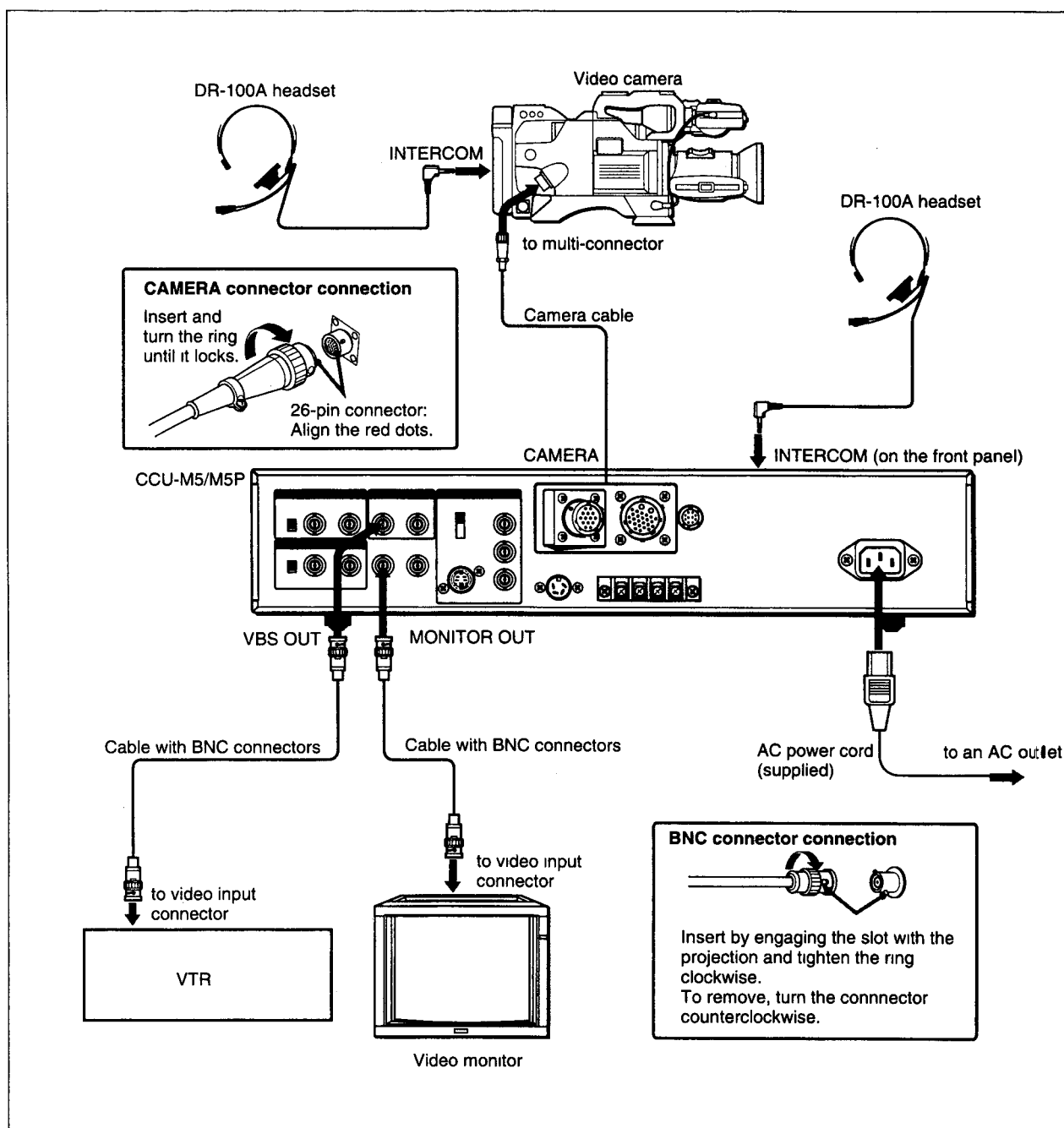
Stands are provided on the bottom of the CCU-M5/M5P. When the unit is used on a table, turning the stands as shown below will allow easy operation.



How to use the stands

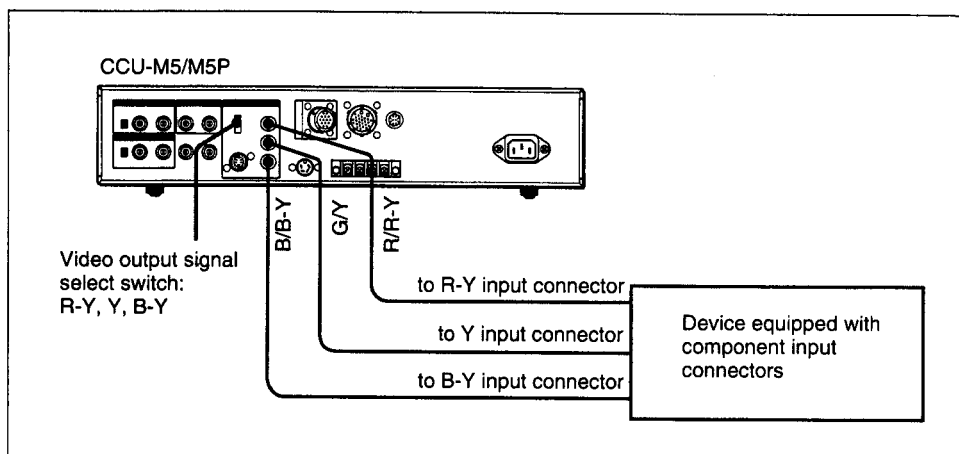
Connections

Connecting a Video Camera



Connection diagram

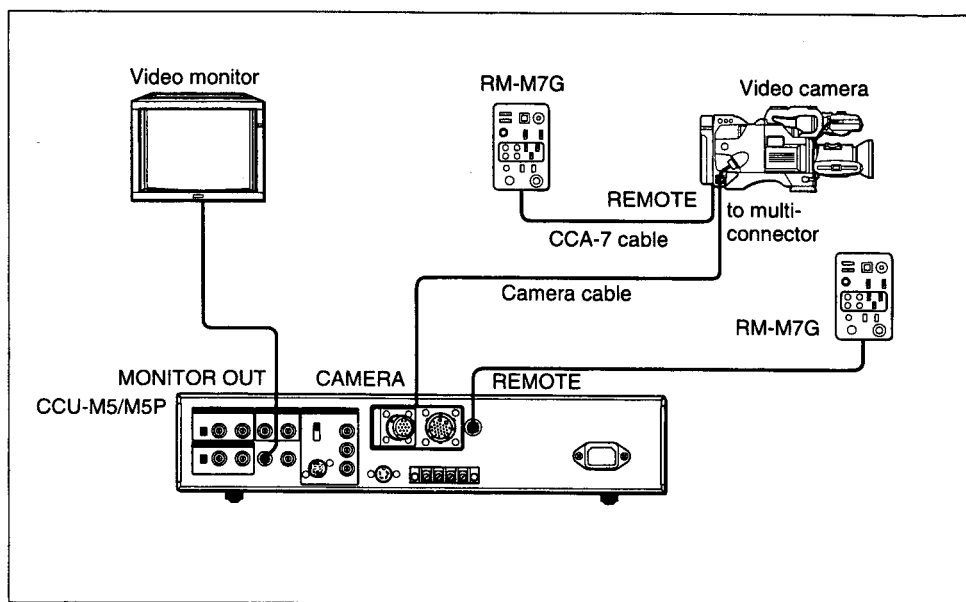
Connecting a device equipped with component input connectors



Connection with a device equipped with the component input connectors

Connecting an RM-M7G remote control unit

When an RM-M7G remote control unit is connected to the CCU-M5/M5P as illustrated below, you can control the video camera with the RM-M7G. The RM-M7G can be connected directly to the video camera.



Connection with the RM-M7G

To control a camera with the RM-M7G

When the power is turned on, the camera is controlled with the CCU-M5/M5P. To control the camera with the RM-M7G, proceed as follows:

- 1** Make the following preparations on the CCU-M5/M5P.
These cannot be adjusted from the RM-M7G.
 - Set the video output signal select switch to the appropriate position according to the connected video equipment.
 - Set the CABLE COMP switch according to the length of the cable.
- 2** Press the PANEL ACTIVE button on the RM-M7G.
Then the camera can be controlled with the RM-M7G through the CCU-M5/M5P.

To control the camera with the CCU-M5/M5P

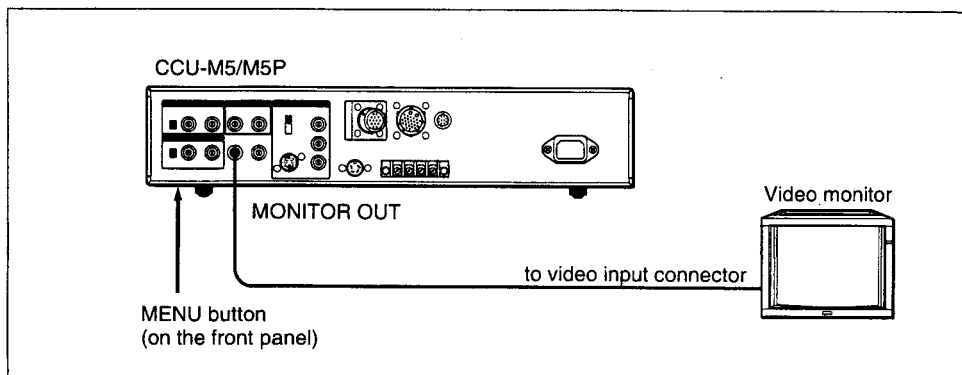
Press the PANEL ACTIVE button on the CCU-M5/M5P.

Notes

- The PANEL ACTIVE button on the RM-M7G may not function if you press it while you are turning a control on the CCU-M5/M5P. In such a case, stop turning the control, then press the PANEL ACTIVE button again.
- When the DXC-3000A/3000AP or DXC-325/325P is used, the RM-M7G cannot be connected to the CCU-M5/M5P.

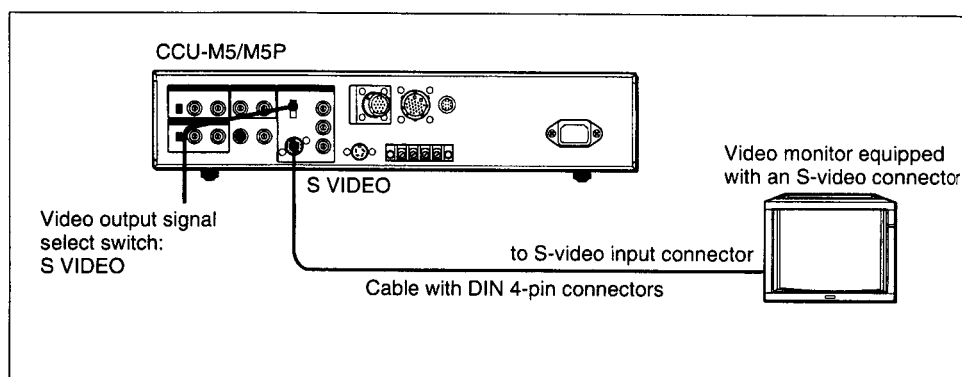
Connecting a video monitor

Monitoring a video and character signals



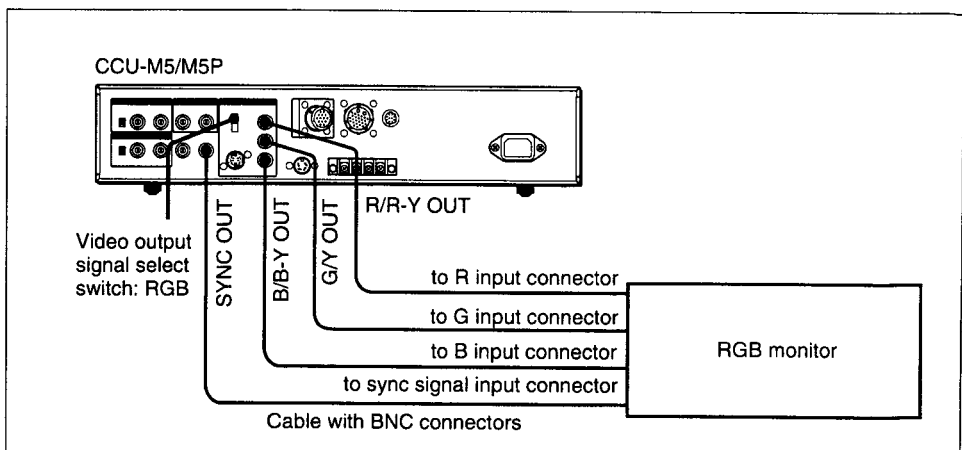
Monitoring a video and character signals

Connecting a video monitor equipped with a Y/C connector



Connecting a video monitor equipped with an S-video connector

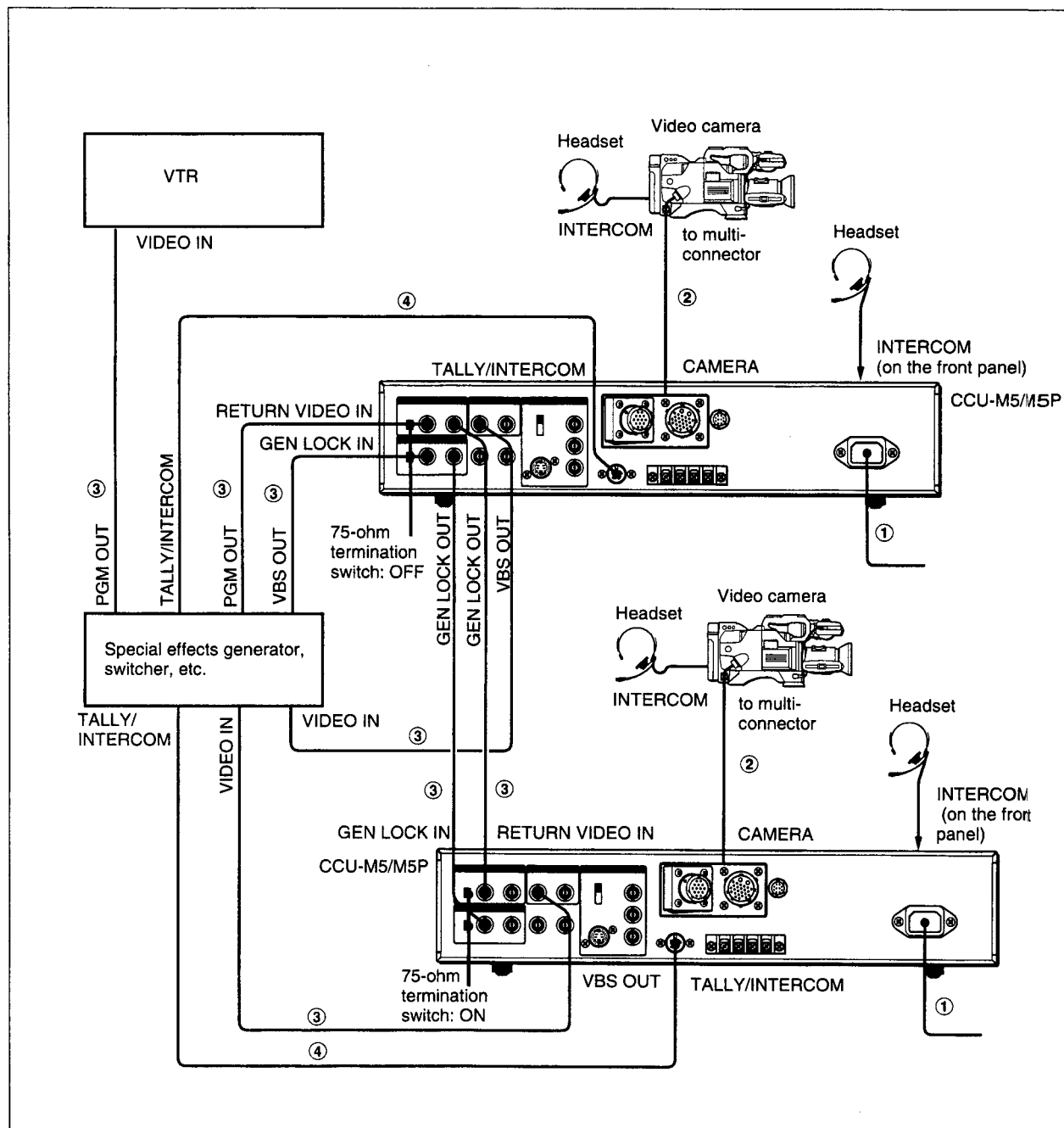
Connecting an RGB monitor



Connecting an RGB monitor

Connecting two or more video cameras

When two or more video cameras are to be used, connect them to the SEG-2550A/2550AP special effects generator, a switcher, etc. using the CCU-M5/M5P camera control units as illustrated below. In this configuration, special effects, such as switching, mixing, wiping, keying and color matting can be performed. Besides these effects, by connecting CRK-2000/2000P universal chroma keyer, you can obtain a wider variety of special effects.



Connecting two or more cameras

Cables to be used

No. in the figure	Cable
①	AC power cord (supplied)
②	Camera cable (See "Length of camera cables.")
③	Cable with BNC connectors
④	Cable with DIN 4-pin connectors

Note on connecting two or more video cameras

When using two or more cameras, connections should be made so that all the cameras will lock to the same reference signal. As the IN and OUT connectors of the GEN LOCK connectors are directly connected in the unit, connect a reference signal to the GEN LOCK IN connector on a CCU, and connect the OUT connector of the CCU to the IN connector of the other CCU, and so forth. Then the same reference signal can be supplied to all the video cameras.

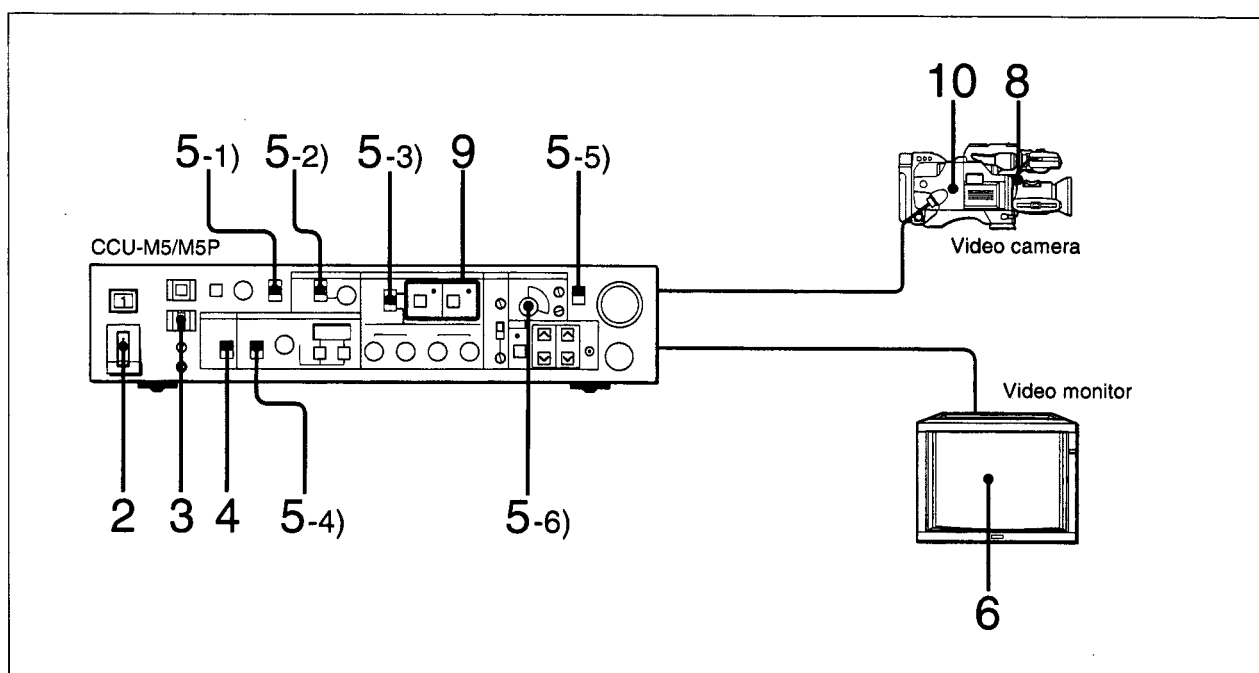
The IN and OUT of the RETURN VIDEO connectors are also connected in the unit so that the return video signal connected to a CCU can be supplied to the all cameras with the same connection as the reference signal.

When the OUT connectors of the GEN LOCK and RETURN VIDEO connectors are used, be sure to set the 75-ohm termination switch to the OFF position. When not used, set the switch to the ON position.

Basic Operation

Standard Settings and Operation

The standard settings and basic operating procedures when using a single camera are described here.



Basic operation

- 1** Turn the power to the connected equipment ON.
- 2** Press the ON side of the POWER switch.
The power is supplied, and the buttons and lamps on the front panel will light.
- 3** Set the LOCK switch to OFF.
- 4** Set the MODE switch to BARS.
- 5** Set the switches as follows (standard settings):
 - 1) GAIN switch to 0
 - 2) KNEE switch to PRESET
 - 3) W/B BALANCE switch to AUTO
 - 4) SHUTTER switch to OFF
 - 5) IRIS MAN/AUTO switch to AUTO
 - 6) CABLE COMP switch to the appropriate position
- 6** Adjust the color of the video monitor using the color bar signal.
See "Adjusting a Video Monitor" on page 1-25.
- 7** Set the MODE switch to CAMERA.

8 Select an appropriate filter with the FILTER selector on the camera.

9 Adjust the black balance and white balance.
See "Adjusting Black Balance and White Balance" on page 1-26.

10 Start shooting.

Adjust the gain, knee, iris, master pedestal, etc. if necessary.
For details on these adjustments, see "Adjustments."

When using two or more video cameras

After the making standard settings, adjust the H phase and SC phase of all the cameras before adjusting the color of the video monitor.
For details, see "Adjusting the SC and H Phases" on page 1-31.

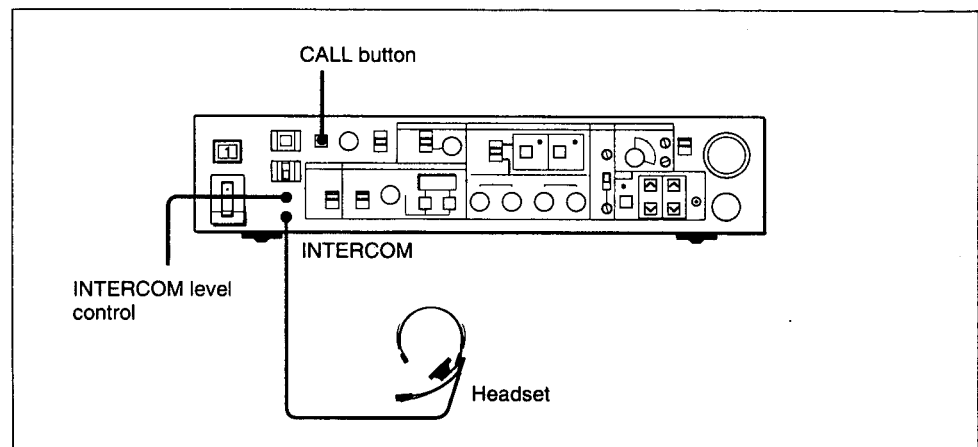
Lock function

When your adjustments are completed, it is recommended to set the LOCK switch to ON. Then the function of the switches, buttons and controls on the panel will be locked, and the setting conditions will be maintained. Under these conditions, the adjusted values are not changed even if a switch, button or other control knob is touched by mistake.
For readjustment or after shooting, set the LOCK switch to OFF.

Communication with a Camera Operator or Control Console Operator

When a DR-100A intercom headset (optional) is connected via the INTERCOM connector on the front panel, communication between the CCU and the camera is enabled. To notify the camera operator that the CCU operator wants to talk with him, press the CALL button on the CCU. The tally lamp in the viewfinder of the camera will light.

If the TALLY/INTERCOM connector or INTERCOM/TALLY connectors on the rear panel is/are connected to the intercom connector on the control console or special effects generator, or to the intercom system, communication with the operator of the connected equipment is also enabled.

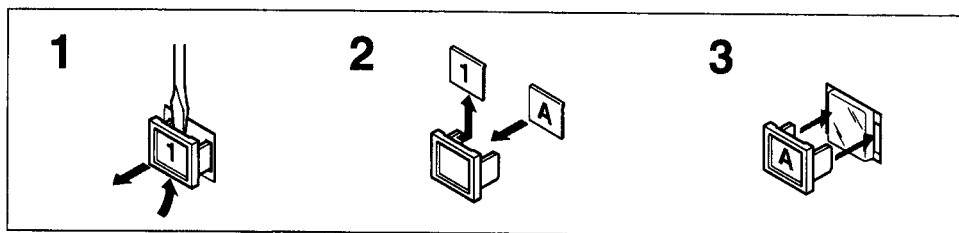


Communication with the operator of connected equipment

Tally lamp

The tally lamp will light when a camera connected to the CCU is selected at the control console or the special effects generator, or when the CALL button of the CCU is pressed to call the camera operator.

The number or characters on the tally lamp can be changed using the number or character segments (supplied) as shown below.



Changing the number or characters on the tally lamp

- 1** Detach the tally indication using a screwdriver.
- 2** Change the number or characters with the supplied segment.
- 3** Attach the tally indication.

When a program output connector on the control console is connected to the RETURN VIDEO IN connector, the return video signal (the signal selected at the control console) can be seen on the viewfinder screen by setting the VF VIDEO selector to AUTO and pressing the VTR START/RETURN VIDEO button on the camera.

When two or more cameras are used, the camera operators can check the final program output of the system.

Return video monitoring is possible in the camera's viewfinder, but is not on a video monitor connected to the CCU.

Note on the signal input to the RETURN VIDEO connector

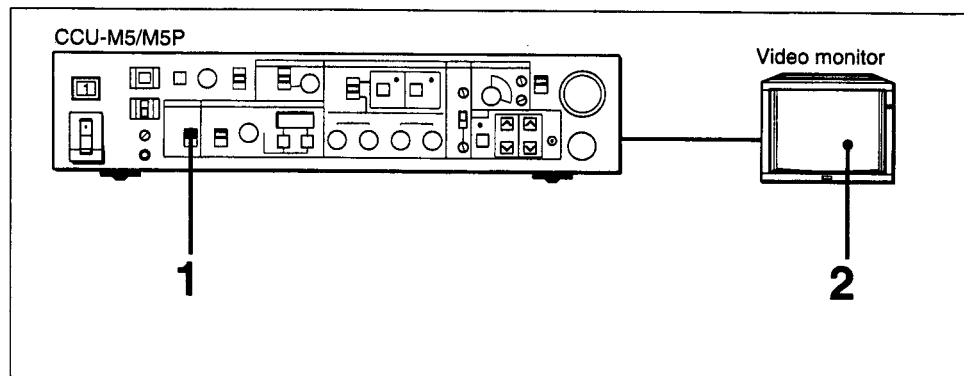
The signal input to the RETURN VIDEO IN connector should be synchronized with the signal input to the GEN LOCK IN connector. Otherwise synchronization of the camera may be unstable.

Adjustments

Adjusting a Video Monitor

When a color video monitor is used to monitor a picture, adjust the color of the monitor by using the color bar signal.

For details on adjustments, refer to the instruction manual furnished with the video camera.



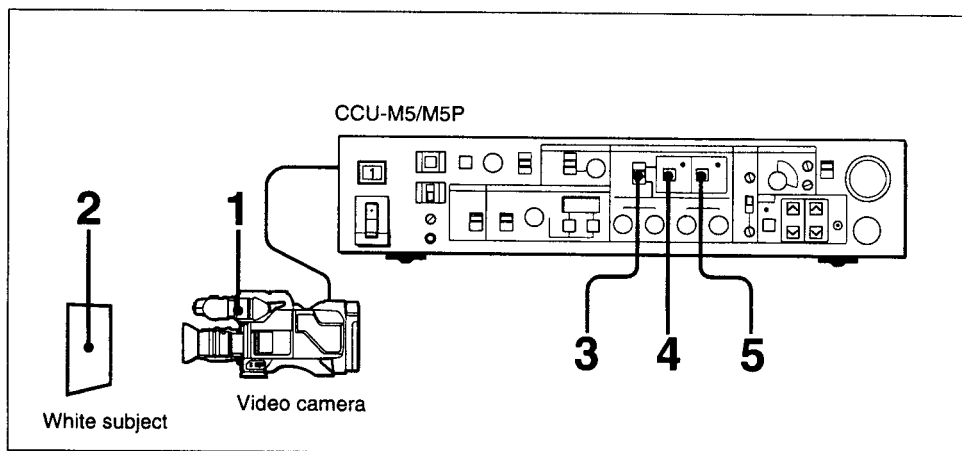
Adjusting the video monitor

- 1** Set the MODE switch to BARS.
- 2** Adjust the color and hue controls on the monitor.
- 3** Set the MODE switch to CAMERA after your adjustments are completed.

Adjusting Black Balance and White Balance

The black balance and white balance should be correctly adjusted to obtain lifelike color reproduction and a clear picture. The adjustments should be made under the same lighting conditions as those under which you will be shooting.

Automatic adjustment



Automatic black balance and white balance adjustment

- 1** Set the FILTER selector of the camera to the position corresponding to the lighting conditions.
- 2** Point the camera at a white subject (white wall, white paper, etc.) and zoom in on it.
For details, refer to the instruction manual for the video camera.
- 3** Set the W/B BALANCE switch to AUTO.
- 4** Press the BLACK button.
The black balance is automatically adjusted, and the lamp associated with the BLACK button lights for about 5 seconds, then goes out.
- 5** Press the WHITE button.
The white balance is automatically adjusted, and the lamp associated with the WHITE button lights for about 5 seconds, then goes out.

Notes

- When the lighting conditions of the subject are changed, adjust the white balance only. Readjustment of the black balance is not required.
- If the lamp does not light within about ten seconds after pressing the BLACK or WHITE button, press the button again.
- If the lamp associated with the WHITE button blinks, check the camera's viewfinder screen to determine the cause. Change the FILTER selector setting of the camera, they try the white balance adjustment again.

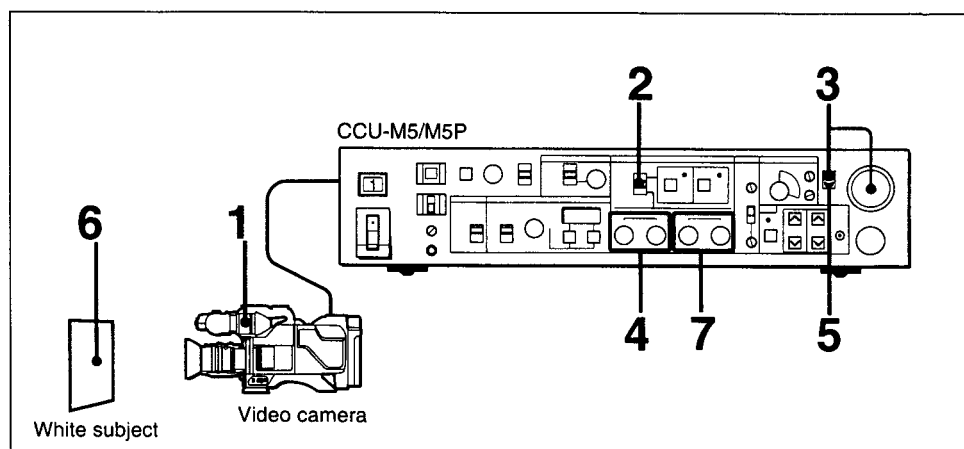
AUTO WHITE : NG

:LOW LIGHT

TRY AGAIN

Manual adjustment

For precise adjustment, it is recommended to use a waveform monitor and a vectorscope.



Manual white balance and black balance adjustment

- 1 Set the filter selector of the camera to the position corresponding to the lighting conditions.
- 2 Set the W/B BALANCE switch to MANUAL.
- 3 Close the iris.
- 4 Turn the PED controls to adjust the black balance.
Adjust the balance so that the monitor screen goes black.
Turn the control while monitoring the waveform.
- 5 Set the iris to the automatic adjustment mode.
- 6 Point the camera at a white subject (white wall, white paper, etc.) and zoom in on it.

- 7 Turn the GAIN controls to adjust the white balance.
Adjust the balance so that the white subject appears white on the color monitor screen.
Turn the controls while monitoring the waveform.

Painting

Using the GAIN and PED controls, a picture can be colored to obtain special effects. For example, a picture can be made reddish to indicate a sunset or bluish to show early morning. This is called "painting."

Monitoring the picture on the color monitor screen, turn the GAIN and PED controls until the desired coloring is obtained.

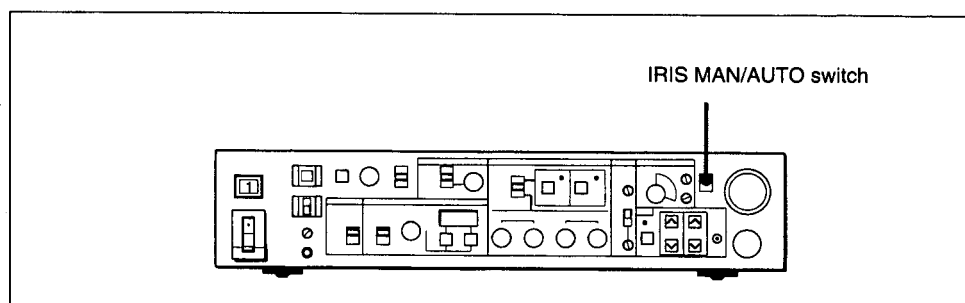
To start recording without adjusting the white balance

Set the FILTER selector on the camera to the appropriate position, and set the W/B BALANCE switch to PRESET. An approximate balance will be obtained.

Adjusting the Iris

Be sure to set the IRIS selector on the lens unit to AUTO.

Automatic adjustment

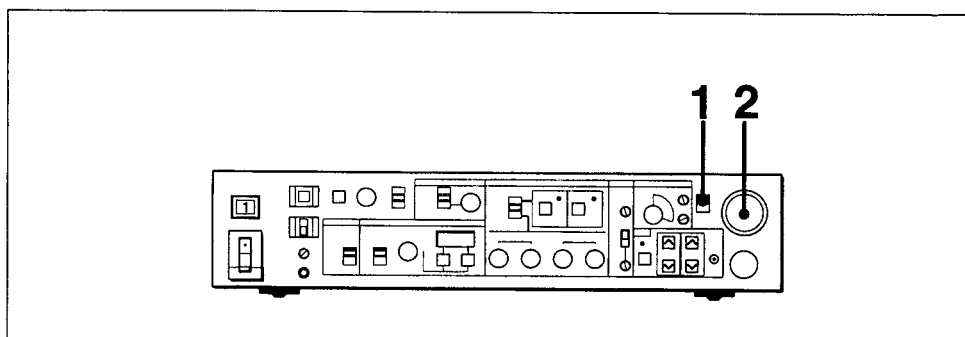


Automatic iris adjustment

Set the IRIS MAN/AUTO switch to AUTO.
 The iris will be automatically adjusted according to the brightness of the subject.
 You can precisely adjust the iris in automatic iris mode by turning the IRIS control.

Manual adjustment

Manual adjustment may be more effective when recording an object against a bright sky or a scene with high contrast.

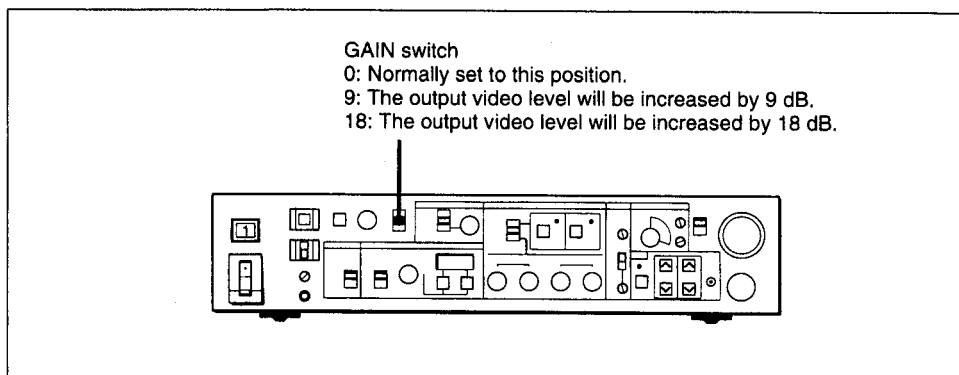


Manual iris adjustment

- 1** Set the IRIS MAN/AUTO switch to MAN.
- 2** Turn the IRIS control to adjust the iris.

Adjusting the Video Gain

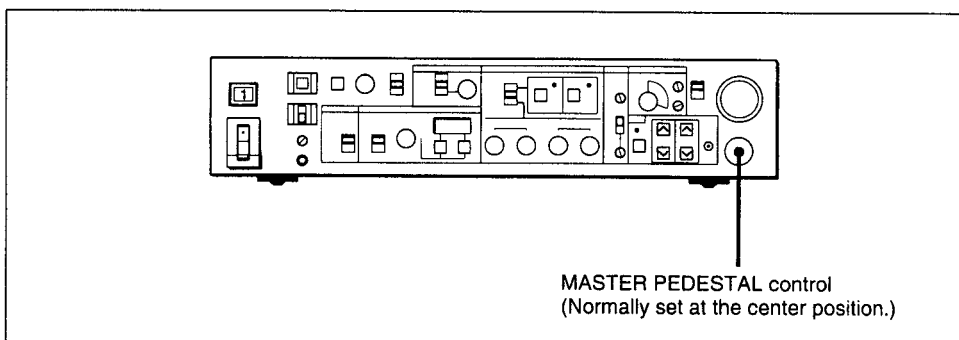
If a clear picture cannot be obtained because of insufficient lighting, raise the video output using the GAIN switch.



Video gain adjustment

Adjusting the Master Pedestal Level

When the details of the dark parts of a picture cannot be reproduced in detail, adjust the master pedestal level with the MASTER PEDESTAL control. Use of a waveform monitor is recommended for easier adjustment.



Master pedestal level adjustment

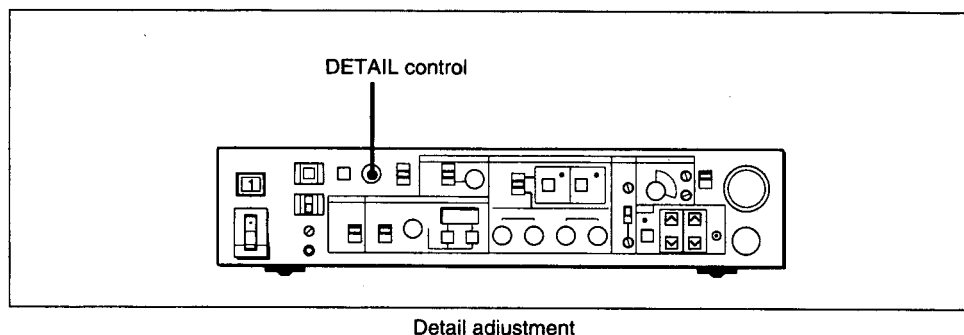
Memorizing the adjusted value

The adjusted value of the master pedestal level normally cannot be stored in memory. However when a DXC-M7/M7P video camera is connected, it can be stored in memory by resetting the internal switch of the camera.

For details, refer to the instruction manual for the video camera.

Adjusting the Details

The contours of a picture can be changed using the DETAIL control.

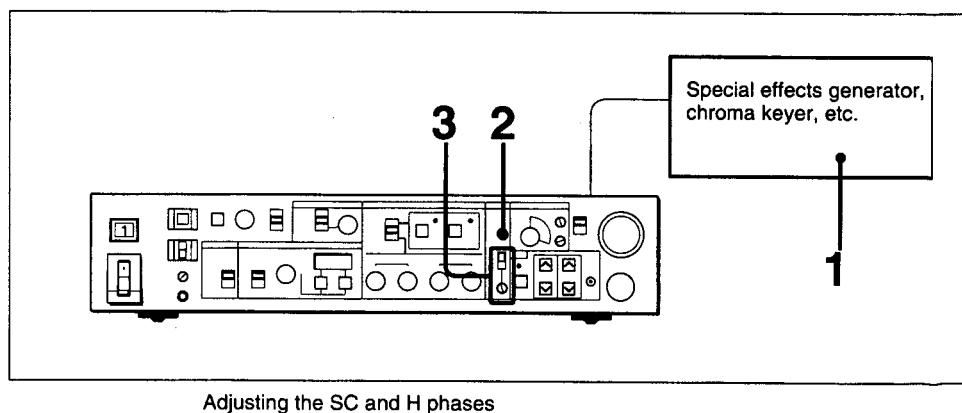


Adjusting the SC and H Phases

When two or more cameras are used, all cameras should be adjusted so that the picture tone of all cameras will be the same. Supply the same reference signal to all the cameras, and proceed as follows.

If the phase check indication is available

If the CCU-M5/M5Ps are connected to a special effects generator such as the SEG-2550A/2550AP or the CRK-2000/2000P universal chroma keyer, the phase check indication is available.



- 1** Set the PHASE INDICATION switch on the connected special effects generator or chroma keyer to ON.
- 2** Adjust the horizontal phase by turning the H PHASE control on the CCU-M5/M5P.

- 3** Adjust the subcarrier phase by using the SC PHASE switch and controls of the CCU-M5/M5P.

For details, refer to the instruction manual for the special effects generator or chroma keyer.

If the phase check indication is not available

Pick one camera as the reference camera and adjust all other cameras to it. For example, if Camera 1 is picked as the reference camera, first precisely adjust Camera 1 to obtain the best possible picture, and then adjust the picture of Camera 2 to Camera 1, the picture of Camera 3 to Camera 1, and so on.

Adjusting the H phase

Adjust the horizontal sync signal phase of the output signal so that the phases of the reference signal and output signal become the same. Use of a waveform monitor or an oscilloscope is recommended for easier adjustment.

Adjusting the SC phase

Adjust the subcarrier phase of the output signal so that the phases of the reference signal and output signal become the same. It is recommended to use a vectorscope, or to display the same pictures on the upper and lower (or right and left) halves of the video monitor screen by using the wipe function of the special effects generator for easier adjustment.

For details, refer to the instruction manual for the special effects generator, etc.

Adjusting the Knee

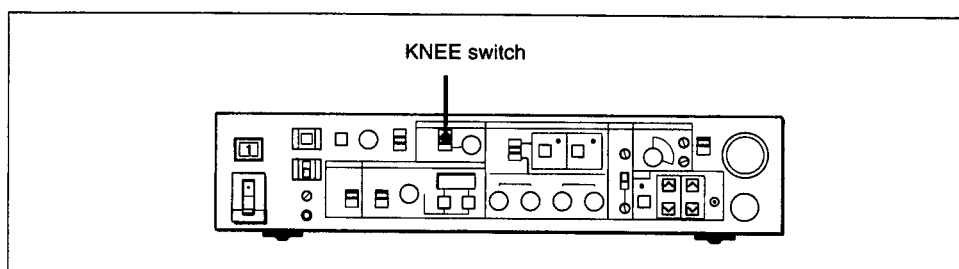
When recording a scene with high contrast or with bright light, adjust the knee point to reproduce the bright parts of the picture clearly.

Normally set the KNEE switch to PRESET, and the factory-set standard knee point can then be obtained.

Note

The KNEE adjustment function is activated only when the DXC-M7/M7P video camera is connected.

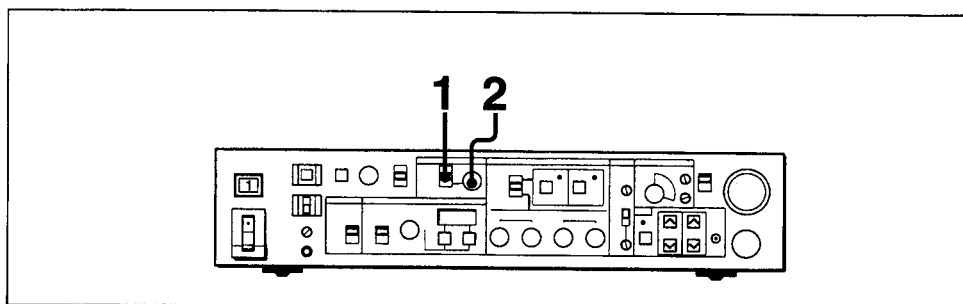
Automatic adjustment



Automatic knee adjustment

Set the KNEE switch to AUTO. The proper knee point is set according to the brightness of the subject to obtain the best possible picture.

Manual adjustment

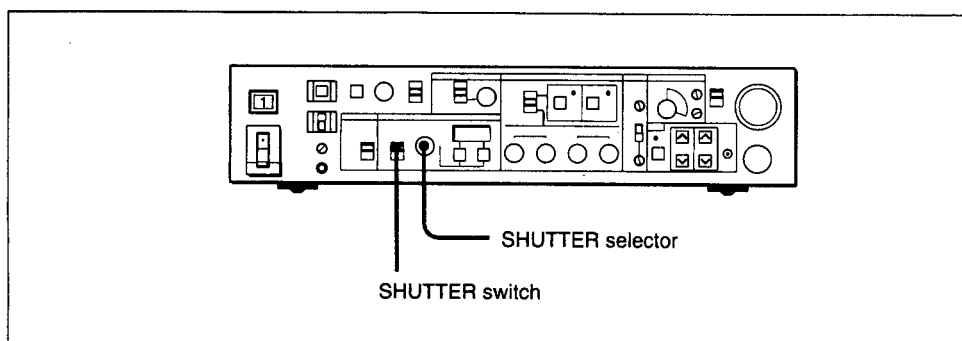


Manual knee adjustment

- 1** Set the KNEE switch to MANUAL.
- 2** Turn the KNEE control.

Setting the Shutter Speed

Normally set the SHUTTER switch to OFF. Then normal shooting is done.
To shoot a subject moving at high speeds clearly, or to obtain a strobe effect, a still picture, a slow motion, etc., select the appropriate shutter speed with the SHUTTER selector.



Shutter speed selection

SHUTTER selector setting

SHUTTER selector setting	Shutter speed
1	1/100 sec. for the NTSC model, 1/60 sec. for the PAL model ^{a)}
2	1/250 sec.
3	1/500 sec.
4	1/1000 sec.
5	1/2000 sec.

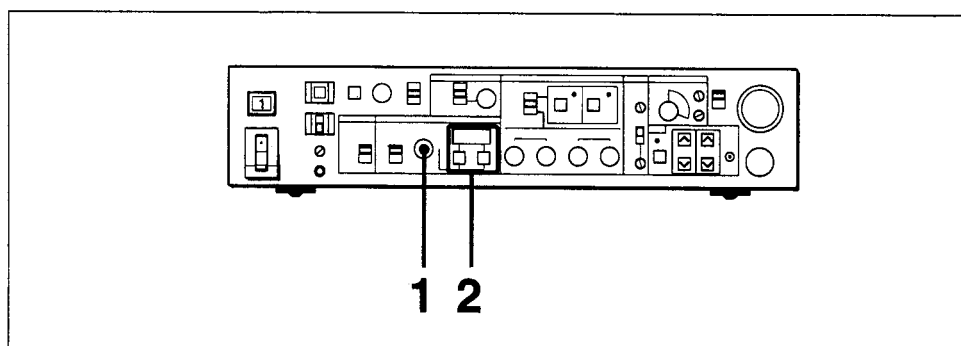
^{a)} When shooting under a fluorescent lamp in the area of power frequency 50 Hz (for the NTSC model) or 60 Hz (for the PAL model), use this setting. Then flicker can be reduced.

Decreasing Slant Noise from a Computer Screen (Clear Scan Function)

The Clear Scan function decreases the slant noise when you are shooting a computer screen using the video camera.

Note

The Clear Scan function is activated only when the DXC-930/930P video camera is connected.



Clear Scan function

- 1** Set the SHUTTER control to C.SCAN.
- 2** Press the C.SCAN button to obtain the least slant noise while monitoring the picture on the screen.
The adjusted value appears on the display.

When the SHUTTER switch is set to ON, the adjusted value is stored in memory, and retained even when the power is turned off.

Compensating for the Cable Length

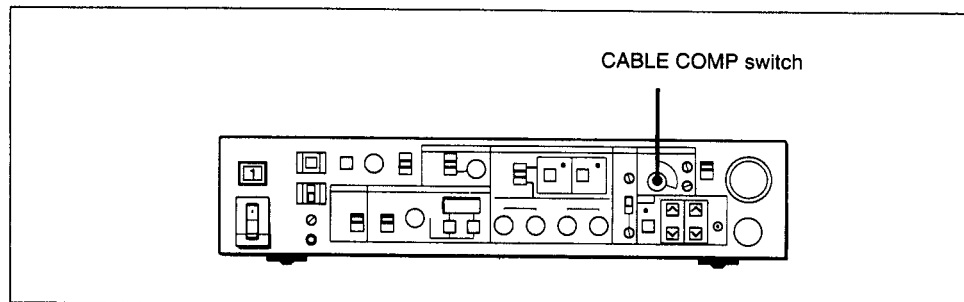
Coarse adjustment

Set the CABLE COMP selector to the appropriate position according to the length of the cable which connects the video camera to the CCU-M5/M5P. The transmission loss from high-frequency components or the output level decrease caused by the cable extension can be compensated for up to 300 meters. The maximum cable length to be compensated for depends on the type of a cable and the equipment used in combination.

For details, see "Functions Using the CCU-M5/M5P."

Note

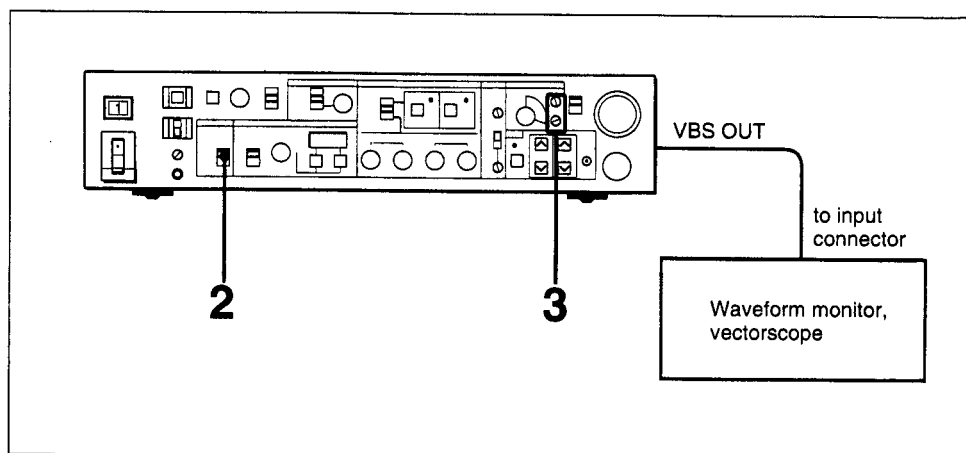
When the cable length to be used is less than ten meters, set the CABLE COMP selector to 25 and perform fine adjustment with the CABLE COMP FINE controls.



Coarse cable compensation

Fine adjustment

The signal fed from the VBS OUT connector can be compensated precisely with the CABLE COMP FINE adjustment screws. Using the Y and C controls, the luminance and chrominance signals can be compensated separately. Use of a waveform monitor or vectorscope is recommended for fine adjustment.



Fine cable compensation

- 1** Connect the VBS OUT connector to the input connector of a waveform monitor or a vectorscope.
- 2** Set the MODE switch to BARS.
- 3** Adjust the luminance and chrominance level while monitoring the waveform monitor.

Adjusting the luminance level

Turn the Y control until the luminance level reaches the specified level.

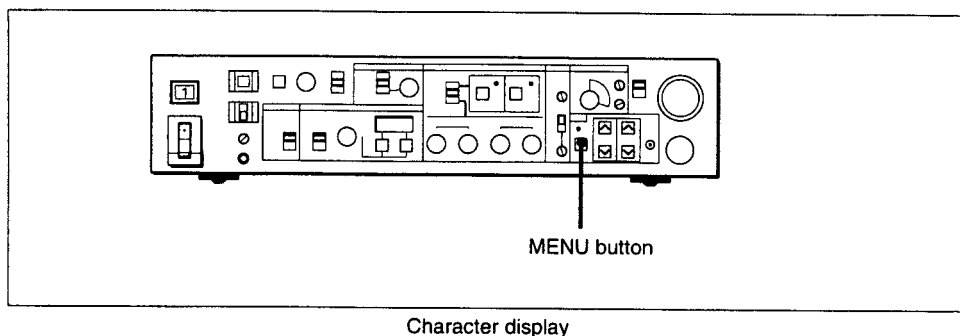
Adjusting the chrominance level

Turn the C adjustment screw until the burst level reaches the specified level.

When a vectorscope is connected, turn the C control so that the vector matches the "田" mark position on the vectorscope screen.

Auxiliary Operation

Display adjusted value



Press the MENU button of the AUX operation functions, and the current setting on the panel appears on the screen of the video monitor connected to the MONITOR OUT connector.

When the DXC-930/930P video camera is connected, the current setting appears if the MENU button is pressed twice.

To clear the displayed characters

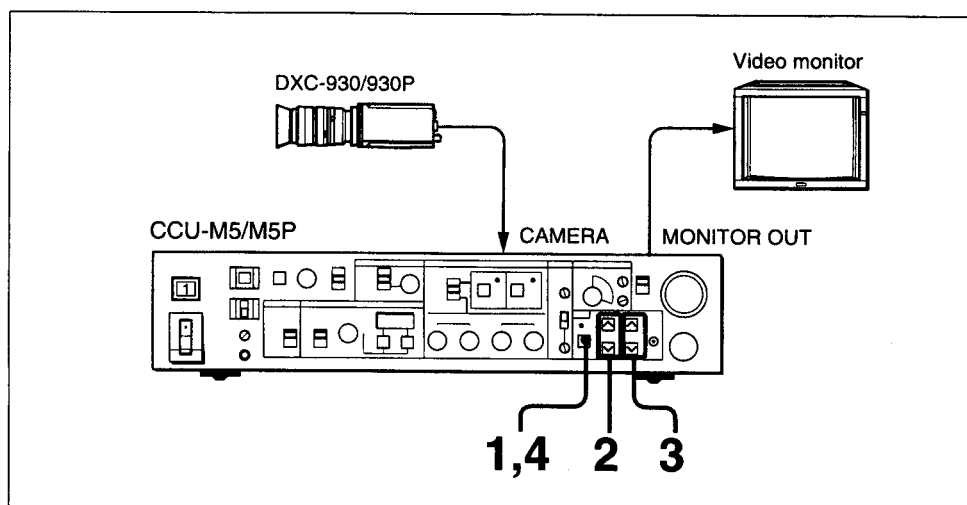
Press the MENU button again

Auxiliary operation

When the DXC-930/930P is connected to the CCU-M5/M5P, the items not provided on the CCU-M5/M5P can be adjusted using the buttons of the AUX operation functions. Connect a video monitor to the MONITOR OUT connector, and the items and setting status which can be adjusted will appear on the monitor screen.

Note

The FUNCTION, DATA, and RESET buttons of the AUX operation functions are activated only with the DXC-930/930P video camera connected.



AUX operation

- 1** Press the MENU button
The MENU lamp lights up, and the following menu appears on the monitor screen.

GAIN: STEP	Gain adjustment (manual/auto)
C. TEMP: 3200K	Color temperature selection
G. SYNC: ON	Sync ON/OFF
CCD-IRIS: OFF	CCD iris ON/OFF
D-SUB: VBS	Selection of the output signal from D-SUB (VBS/YC)
FLD/FRM: FLD	Selection of the read-out of CCD (field/frame)
GAMMA: ON	Gamma compensation ON/OFF

Menu

- 2** Press the FUNCTION buttons until the arrow moves to the item whose setting is to be changed.
- 3** Press the DATA buttons until the desired setting for the selected item is obtained.
- 4** Press the MENU button.
The MENU lamp goes out, and the auxiliary operation mode is terminated. On the monitor screen, the current setting on the panel appears.
- 5** Press the MENU button again.
The displayed characters disappear, and the camera picture is displayed.

The settings are stored on an EEPROM and are retained even if the power is turned off.

To retrieve the standard settings

Press the RESET button while the menu is displayed on the monitor screen. The settings of the displayed items are returned to the standard settings (as set at the factory).

Specifications

General

Power requirement	CCU-M5: 120 V AC $\pm$ 10%, 50/60 Hz CCU-M5P: 220 to 240 V AC $\pm$ 10%, 50/60 Hz
Power consumption	54 W
Operating temperature	5°C to 40°C (41°F to 105°F)
Storage temperature	-20°C to +55°C (-4°F to +131°F)
Dimensions	424 × 88 × 283 mm (w/h/d) (16 ³ / ₄ × 3 ¹ / ₂ × 11 ¹ / ₄ inches)
Mass	not including projecting parts and controls About 5.9 kg (13 lb)

Output connectors

VBS OUT 1, 2	BNC type (1 in each) VBS: 1.0 Vp-p, sync negative, 75 ohms, unbalanced
S VIDEO OUT	Mini DIN 4-pin (1) Y: 1.0 Vp-p, sync negative, 75 ohms, unbalanced C: burst level 0.286 Vp-p (NTSC) or 0.3 Vp-p (PAL), without sync
R/R-Y, G/Y, B/B-Y OUT	BNC type (1 in each) (selectable) R, G, B: 0.7 Vp-p, 75 ohms Y: 1.0 Vp-p, sync negative, 75 ohms, unbalanced R-Y, B-Y: 0.7 Vp-p (NTSC) or 0.525 Vp-p (PAL), without sync, 75 ohms unbalanced
SYNC OUT	BNC type (1) 4 Vp-p, 75 ohms, negative
MONITOR OUT	BNC type (1) VBS: 1.0 Vp-p, sync negative, 75 ohms, unbalanced

Input/output connectors

GEN LOCK IN/OUT	BNC type (1 in each) VBS (1.0 Vp-p) or black burst (0.45 Vp-p) with loop-through function, with 75-ohm termination switch
CAMERA TALLY/INTERCOM	26-pin and 14-pin (1 in each)
INTERCOM/TALLY	DIN 4-pin (1)
REMOTE	Screw terminals (1 set) 10-pin (1)
RETURN VIDEO IN/OUT	BNC type (1 in each) VBS (1.0 Vp-p), with loop-through function, with 75-ohm termination switch

Control items

Iris	Auto, manual
White balance	Auto, manual, preset, R, B gain
Black balance	Auto, manual, R, B pedestal
Video gain	
Master pedestal level	
Knee point	Auto, manual, preset
Detail	
Electric shutter	
Clear scan	
Mode	Camera, color bars
Tally/intercom	Level adjustment
SC phase	
H phase	
Cable compensation	

Supplied accessories

Rack mount bracket (2)
Screws (4)
AC power cord (1)
Tally indication segments (1 set)
Operating instructions (1)

Recommended Equipment

Video camera

DXC-325/325P, DXC-327/327P, DXC-327A/327AP, DXC-537/537P,
DXC-930/930P, DXC-3000A/3000AP, DXC-M7/M7P,

VTR/disk recorder/printer

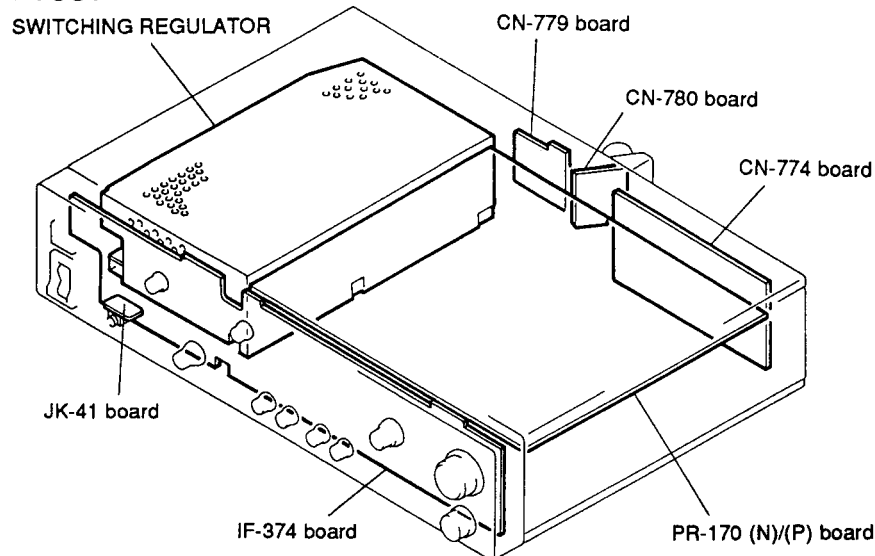
Video cassette recorder VO-8800/8800P, PVW-2800/2800P
Color video printer UP-5100/5000P
Laser videodisk recorder LVR/LVS-5000A

Video equipment for a studio system

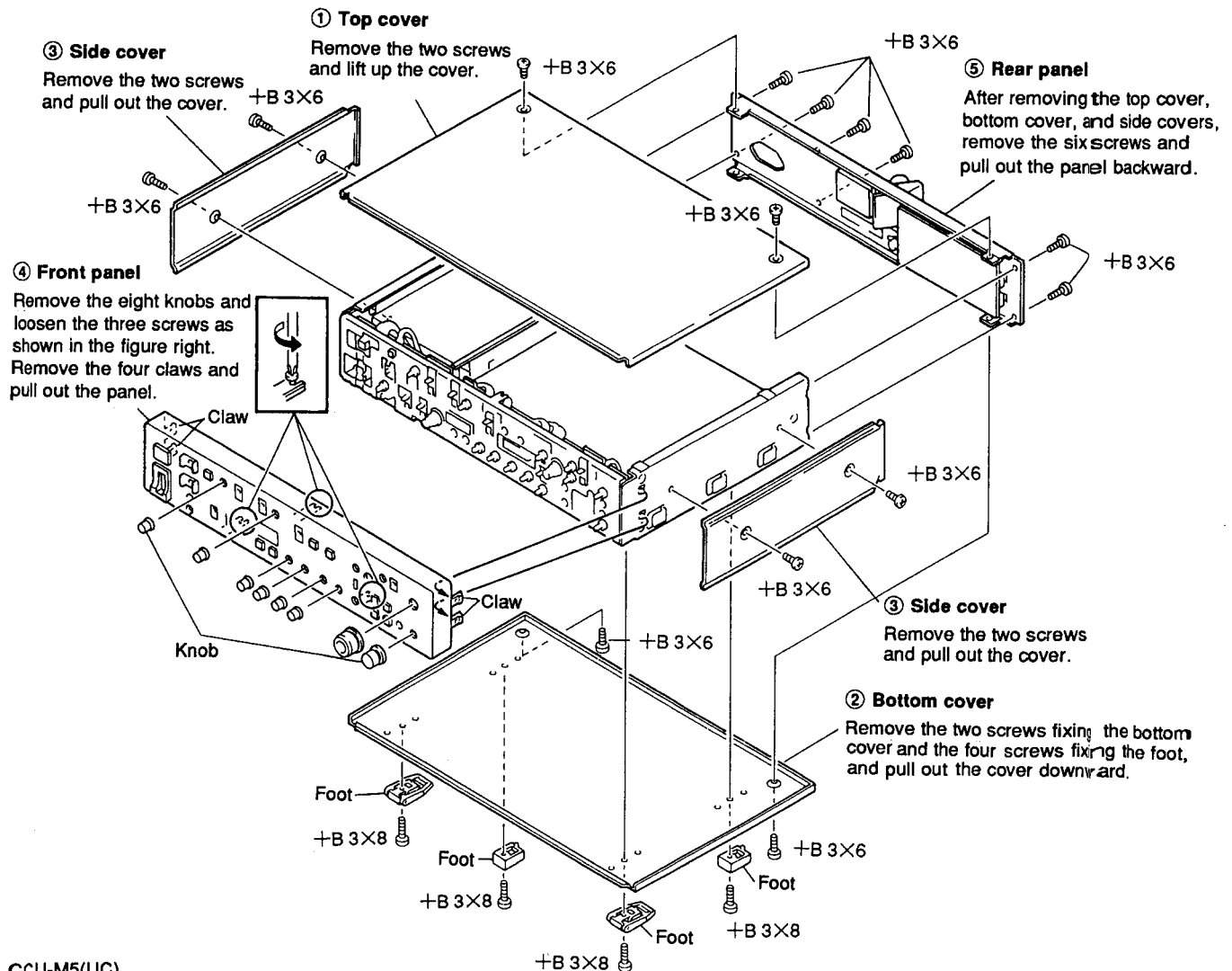
Remote control unit RM-M7G
Special effects generator SEG-2550A/2550AP
Headset DR-100A
Camera cable
CCZ-A2 (2m), CCZ-A5 (5m), CCZ-A10 (10m), CCZ-A25 (25m),
CCZ-A50 (50m), CCZ-A100 (100m),
CCQ-10AM (10 m), CCQ-25AM (25 m), CCQ-50AM (50 m),
CCQ-100AM (100 m)
CCTZ-3RGB (3m), CCTZ-3YC (3 m),
CCTQ-3RGB (3 m, for DXC-930/930P video camera)
CCZ-A cable extension adaptor CCZZ-1B, CCZZ-1E
Tally/intercom cable CCDD-2.5

SECTION 2 SERVICE INFORMATION

2-1. BOARD LAYOUT



2-2. REMOVAL OF CABINET

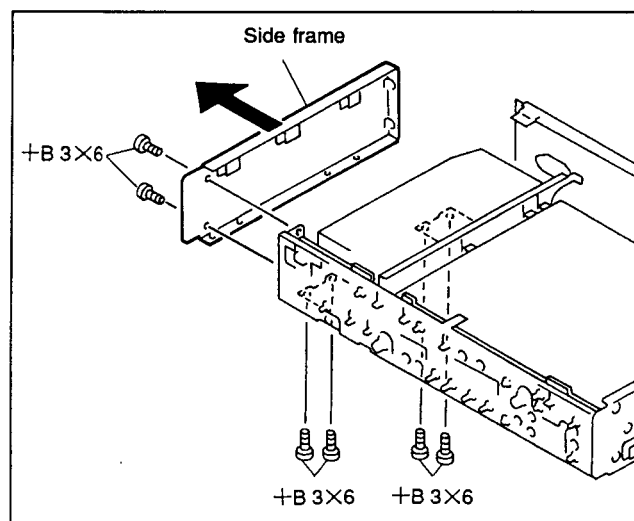


CCU-M5(UC)
CCU-M5P(EK)

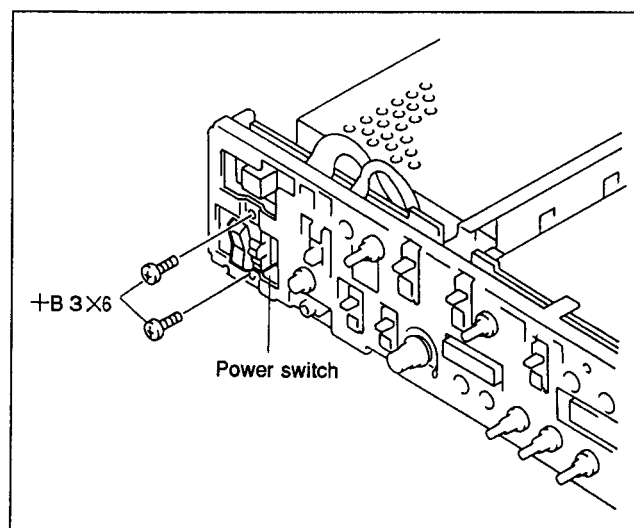
2-3. REPLACEMENT OF MAIN PARTS

2-3-1. Replacement of Switching Regulator

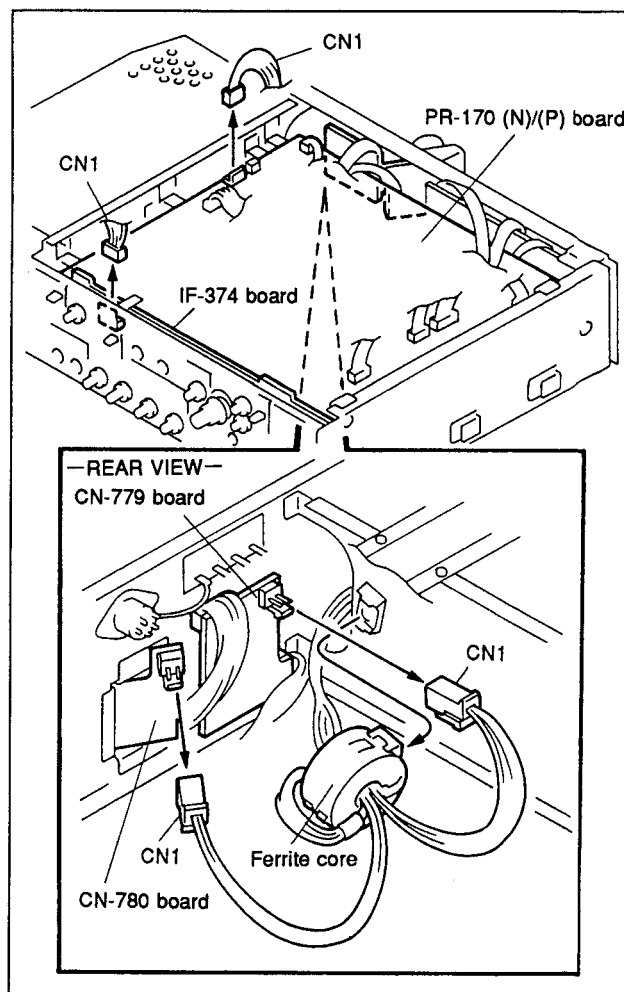
1. Remove the top cover, bottom cover, side cover, front panel, and rear panel. (Refer to steps ① through ⑤ in 2-2. REMOVAL OF CABINET.)
2. Remove the six screws (+B3×6) and remove the side frame.



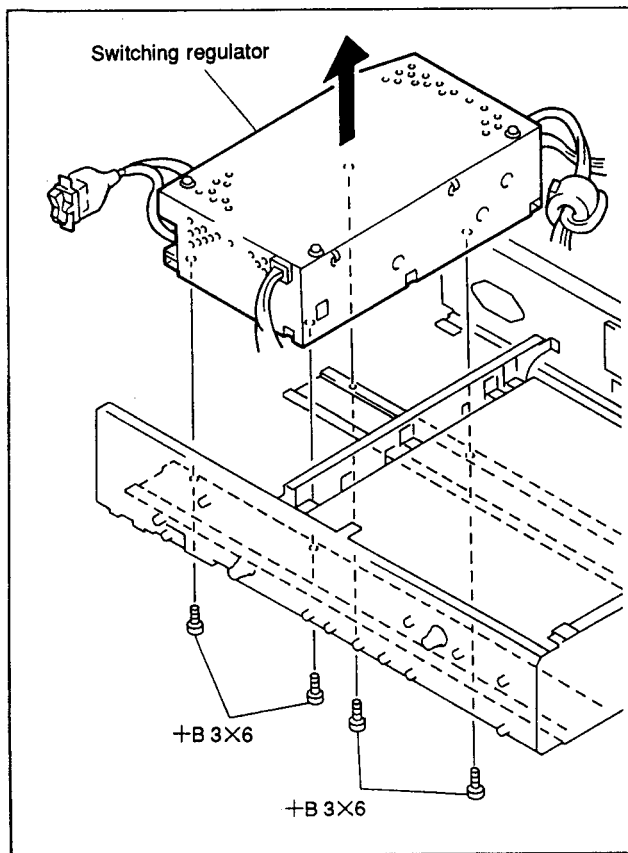
3. Remove the two screws (+B3×6) and remove the power switch.



4. Disconnect the housing connectors from individual CN1 on the IF-374 board, PR-170 (N)/(P) board, CN-779 board, and CN-780 board and remove the ferrite core.



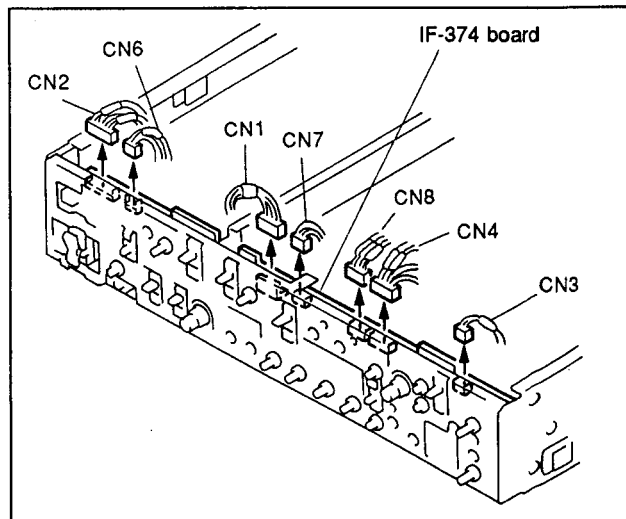
5. Remove the four screws (+B×6) from the bottom side of the unit, and remove the switching regulator.



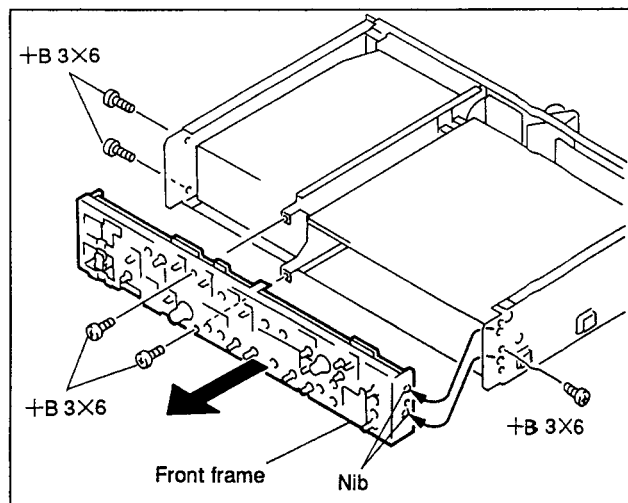
6. Install a new switching regulator in the reverse order of steps 1 through 5.

2-3-2. Replacement of IF-374 Board

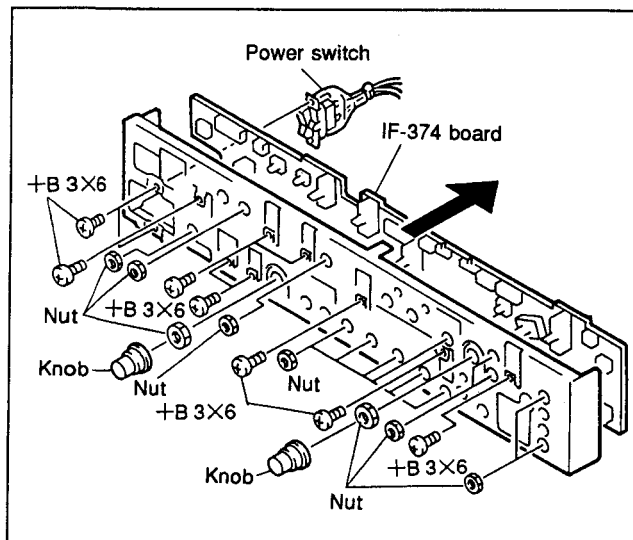
1. Remove the top cover, side cover, and front panel. (Refer to steps ①, ③, and ④ in 2-2. REMOVAL OF CABINET.)
2. Disconnect the housing connectors from CN2, CN6, CN1, CN7, CN8, CN4, and CN3 on the IF-374 board.



3. Remove the five screws (+B3×6) and the two nibs, and pull out the front frame forward.



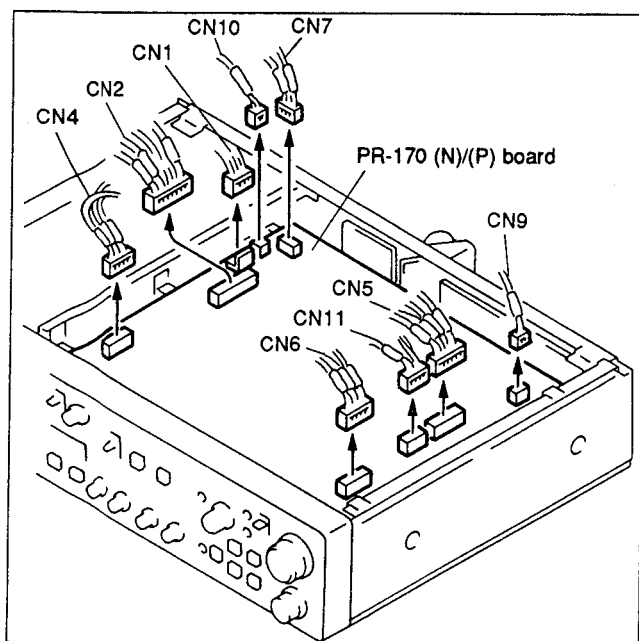
4. Remove the two screws (+B3×6) and remove the power switch. Remove the two knobs and the fifteen nuts. And remove the eight screws (+B3×6) and remove the IF-374 board.



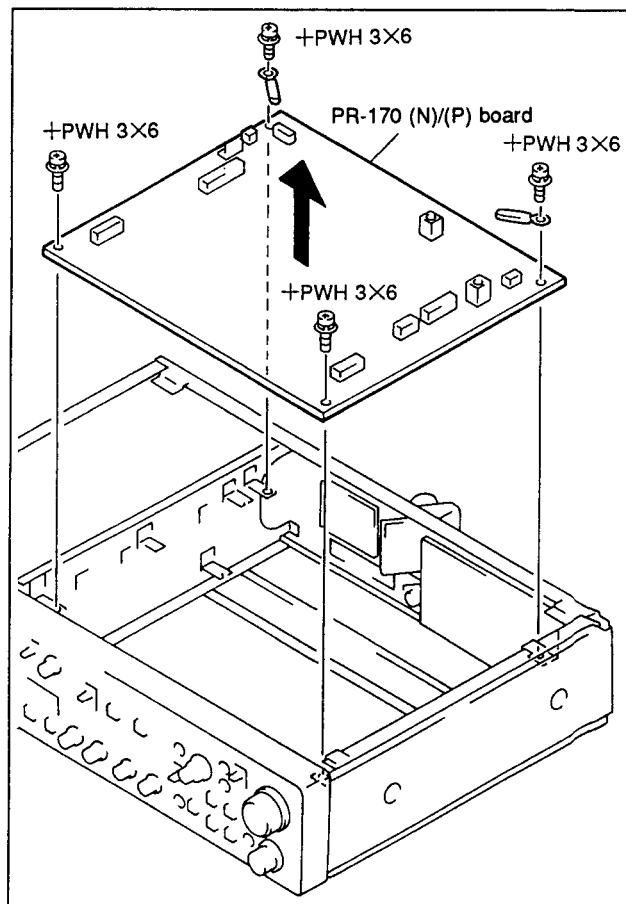
5. Install the new IF-374 board in the reverse order of steps 1 through 4.

2-3-3. Replacement of PR-170 (N)/(P) Board

1. Remove the top cover. (Refer to step ① in 2-2. REMOVAL OF CABINET.)
2. Disconnect the housing connectors from CN4, CN2, CN1, CN10, CN7, CN6, CN11, CN5, and CN9 on the PR-170 (N)/(P) board.



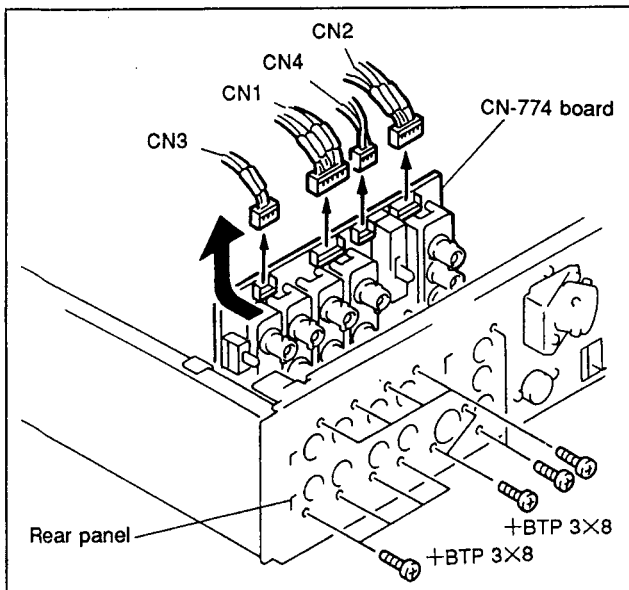
3. Remove the four screws (+PWH3×6) and remove the IF-374 board.



4. Install the new PR-170 (N)/(P) board in the reverse order of steps 1 through 3.

2-3-4. Replacement of CN-774 Board

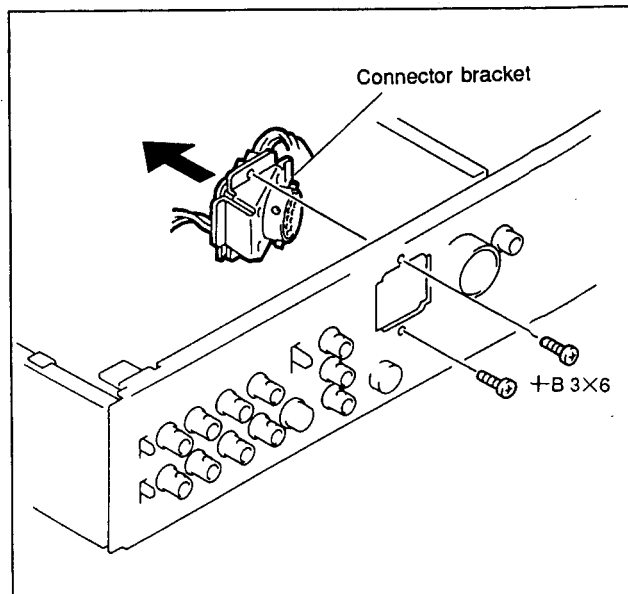
1. Remove the top cover (see step ① in 2-2. REMOVAL OF CABINET.) and the PR-170 (N)/(P) board (see steps 1 through 3 in 2-3-3. Replacement of PR-170 (N)/(P) Board.)
2. Remove the twelve screws (+BTP3×8) from the rear panel and disconnect the housing connectors from CN3, CN1, CN4 and CN2 on the CN-774 board to remove the CN-774 board.



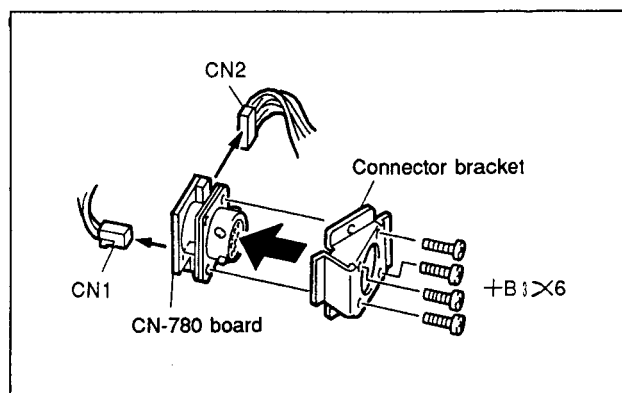
3. Install the new CN-774 board in the reverse order of steps 1 through 2.

2-3-5. Replacement of CN-780 Board

1. Remove the top cover (see step ① in 2-2. REMOVAL OF CABINET.) and the PR-170 (N)/(P) board (see steps 1 through 3 in 2-3-3. Replacement of PR-170 (N)/(P) Board.)
2. Remove the two screws (+B3×6) and remove the connector bracket from the rear panel.



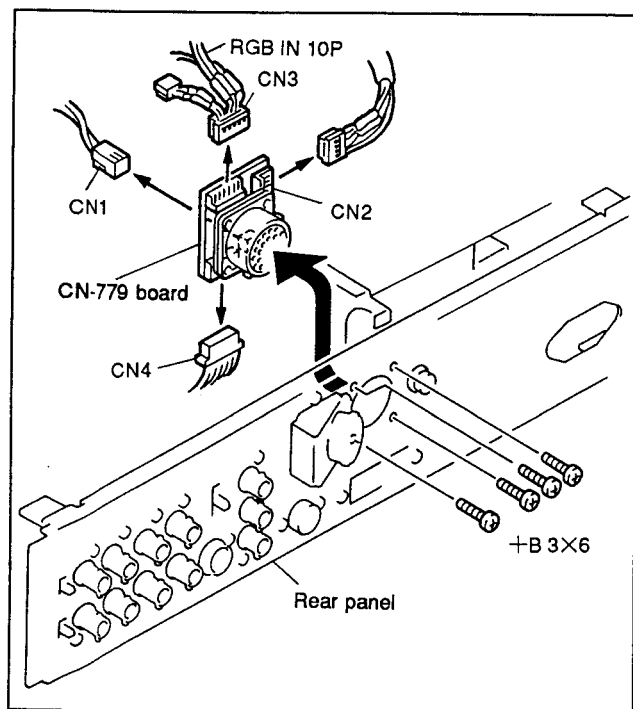
3. Remove the four screws (+B3×6) and remove the CN-780 board from the connector bracket. And remove the housing connectors from CN1 and CN2 on the CN-780 board.



4. Install the new CN-780 board in the reverse order of steps 1 through 2.

2-3-6. Replacement of CN-779 Board

1. Remove the top cover (see step ① in 2-2. REMOVAL OF CABINET.) and the PR-170 (N)/(P) board (see steps 1 through 3 in 2-3-3. Replacement of PR-170 (N)/(P) Board.)
2. Remove the four screws (+B3×6) from the rear panel. Remove the connectors from CN1 (see step 4 in 2-3-1. Replacement of Switching Regulator), CN2, CN3, and CN4 on the CN-779 board to remove the CN-779 board.



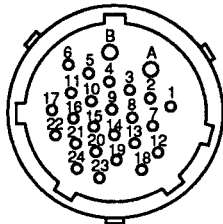
3. Install the new CN-779 board in the reverse order of steps 1 through 2.

2-4. CONNECTORS AND CABLES

2-4-1. Connector Input/Output Signals

The main connector input/output signals are as follows.

CAMERA (26P, FEMALE)

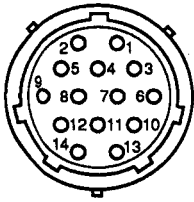


(EXT VIEW)

No.	SIGNAL	SPECIFICATION
A	EXT DC(CCZ) OUT(X)	10.5 to 17.0 Vdc, 3A
B	EXT DC OUT(G)	GND for POWER
1	EN VIDEO IN(X)	VBS=1.0 Vp-p±10% Zo=75 Ω±5% DC=0±200 mV
2	EN VIDEO IN(G)	GND for EN VIDEO
3	G/Y/Y VIDEO IN(G)	GND for G/Y
4	G/Y/Y VIDEO IN(X)	VS=1.0 Vp-p±2% Zo=75 Ω±5% DC=0±200 mV
5	R/R-Y/C VIDEO IN(X)	V=714/700/286 mVp-p (BURST)±2% (75% COLOR BARS) Zo=75 Ω±5% DC=0±200 mV
6	R/R-Y/C VIDEO IN(G)	GND for R/R-Y/C
7	B/B-Y VIDEO IN(X)	V=714/700 mVp-p±2% (75% COLOR BARS) Zo=75 Ω±5% DC=0±200 mV
8	B/B-Y VIDEO IN(G)	GND for B/B-Y
9	(Spare)	
10	(Spare)	
11	(Spare)	
12	TALLY OUT	Zi≥600 Ω

No.	SIGNAL	SPECIFICATION
13	S DATA IN/OUT	Zi≥10 kΩ 4.5±0.5 Vdc 0±0.5 Vdc
14	(Spare)	
15	(Spare)	
16	RET & GEN OUT(G)	GND for RET & GEN
17	INCOM GND	GND for AUDIO MONITOR
18	RET & GEN OUT(X)	Zi=75 Ω±5% VBS=1.0 Vp-p DC=0±200 mV
19	RET & GEN OUT(G)	GND for RET & GEN
20	(Spare)	
21	RET & GEN OUT(X)	Zi=75 Ω±5% VBS=1.0 Vp-p DC=0±200 mV
22	(Spare)	
23	INCOM(X)	Zo=600 Ω
24	INCOM(Y)	

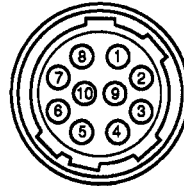
CAMERA (14P, FEMALE)



(EXT VIEW)

No.	SIGNAL	SPECIFICATION
1	GND	
2	+13V OUT	10.6 to 17.0 Vdc, 3A
3	INCOM(X)	$Z_o=600\ \Omega$
4	INCOM(Y)	
5	INCOM/R/G/B GND	
6	EN VIDEO IN(X)	VBS=1.0 Vp-p $\pm 10\%$ $Z_o=75\ \Omega\pm 5\%$ DC=0 ± 200 mV
7	EN VIDEO IN(G)	GND for EN VIDEO
8	RET & GEN OUT(G)	GND for RETURN & GENLOCK
9	RET & GEN OUT(X)	$Z_i=75\ \Omega\pm 5\%$ VS=1.0 Vp-p DC=0 ± 200 mV
10	S DATA IN/OUT	0 to 5V $Z_i\geq 10\ k\Omega$
11	R/C VIDEO IN(X)	V=714/286 mVp-p (BURST) $\pm 2\%$ (75% COLOR BARS) $Z_o=75\ \Omega\pm 5\%$ DC=0 ± 200 mV
12	G/Y VIDEO IN(X)	VS=1.0 Vp-p $\pm 2\%$ $Z_o=75\ \Omega\pm 5\%$ DC=0 ± 200 mV
13	TALLY OUT	$Z_i\geq 600\ \Omega$
14	B VIDEO IN(X)	V=714 mVp-p $\pm 2\%$ (75% COLOR BARS) $Z_o=75\ \Omega\pm 5\%$ DC=0 ± 200 mV

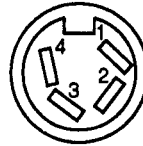
REMOTE (10P, FEMALE)



(EXT VIEW)

No.	SIGNAL	SPECIFICATION
1	PAN	0 to 5V
2	MONITOR OUT(X)	VBS=1.0 Vp-p $\pm 10\%$ $Z_o=75\ \Omega\pm 5\%$ DC=0 ± 100 mV
3	MONITOR OUT(G)	GND for MONITOR
4	TILT	0 to 5 V
5	ZOOM	0 to 5 V
6	S DATA	$Z_i\geq 10\ k\Omega$ 4.5 ± 0.5 Vdc 0 ± 0.5 Vdc
7	ON/OFF	ON: +5 V OFF: 0 V
8	FOCUS	0 to 5 V
9	GND	
10	+9V	

TALLY/INTERCOM(4P, FEMALE)



(EXT VIEW)

No.	SIGNAL	SPECIFICATION
1	TALLY IN	$Z_i\geq 600\ \Omega$
2	INCOM IN/OUT(X)	$Z_o=600\ \Omega$
3	INCOM IN/OUT(Y)	
4	INCOM IN/OUT(G)	GND for INCOM

Note 1:

The signal input to the following pins varies according to setting of the video signal changeover switch on the rear panel of the CCU-M5/M5P.

No.	GBR	Y, B-Y, R-Y	S VIDEO
1	EN VIDEO IN (X)	EN VIDEO IN (X)	EN VIDEO IN (X)
2	EN VIDEO IN (G)	EN VIDEO IN (G)	EN VIDEO IN (G)
3	G VIDEO IN (G)	Y VIDEO IN (G)	Y VIDEO IN (G)
4	G VIDEO IN (X)	Y VIDEO IN (X)	Y VIDEO IN (X)
5	R VIDEO IN (X)	R-Y VIDEO IN (X)	CHROMA VIDEO IN(X)
6	R VIDEO IN (G)	R-Y VIDEO IN (G)	CHROMA VIDEO IN(G)
7	B VIDEO IN (X)	B-Y VIDEO IN (X)	_____
8	B VIDEO IN (G)	B-Y VIDEO IN (G)	_____

2-4-2. Connections

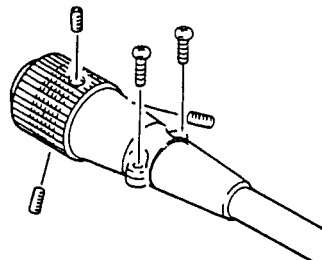
Connections made with the connector panels during installation or service, should be made with the connectors or complete cable assemblies specified in the following list, or equivalent parts.

CONNECTOR FUNCTION	CONNECTOR OF CABLE TO BE CONNECTED
CAMERA (26P, FEMALE)	1-564-183-21 CONNECTOR, 26P, MALE • For 26P-CAMERA use CCZ-A2(2m) } CCZ-A100(100m) 1-564-183-00 CONNECTOR, 26P, MALE • For 20P-CAMERA use CCTZ-3RGB(3m) CCTZ-3YC(3m)
CAMERA (14P, FEMALE)	1-508-929-00 CONNECTOR, 14P, MALE • For 14P-CAMERA use CCQ-10AM(10m) } CCQ-100AM(100m) • For 20P-CAMERA use CCTQ-3RGB(3m)
REMOTE (10P, FEMALE)	1-506-522-11 PLUG, CONNECTOR, ROUND 10P, MALE HIROSE HR10A-10P-10P equality
TALLY/INTERCOM (4P, FEMALE)	1-508-723-00 4P, PLUG, DIN CCDD-2.5(2.5m)

2-4-3. Disconnection of CCZ/CCTZ/CCQ/CCTQ Connectors

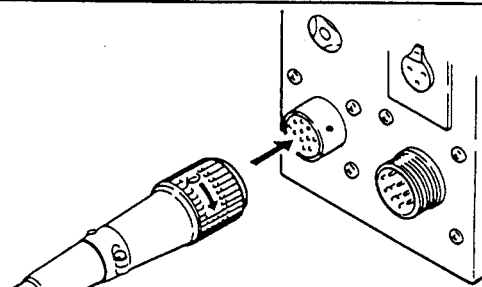
Step 1.

Remove the three hexagonal setscrews and the two (+) setscrews.



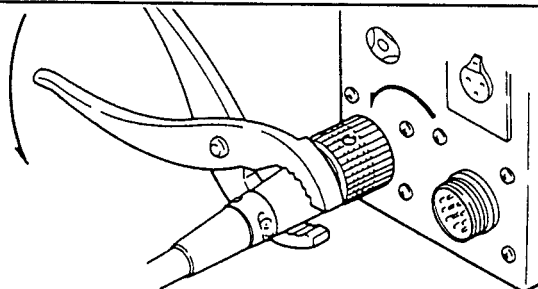
Step 2.

Fix the CCZ/CCTZ/CCQ/CCTQ connectors at the camera or VTR connector.



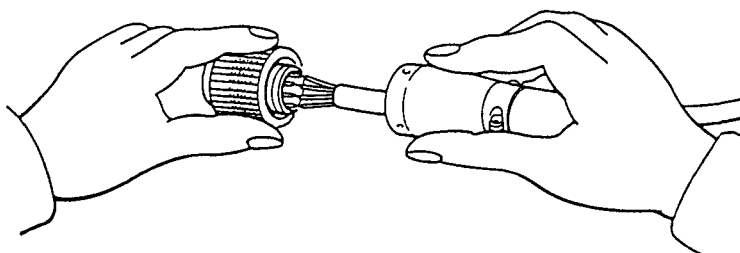
Step 3.

Rotate the CCZ/CCTZ/CCQ/CCTQ connectors to counterclockwise by the plier and loosen it.



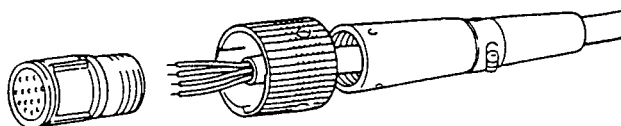
Step 4.

It can be removed by hand and unsolder.



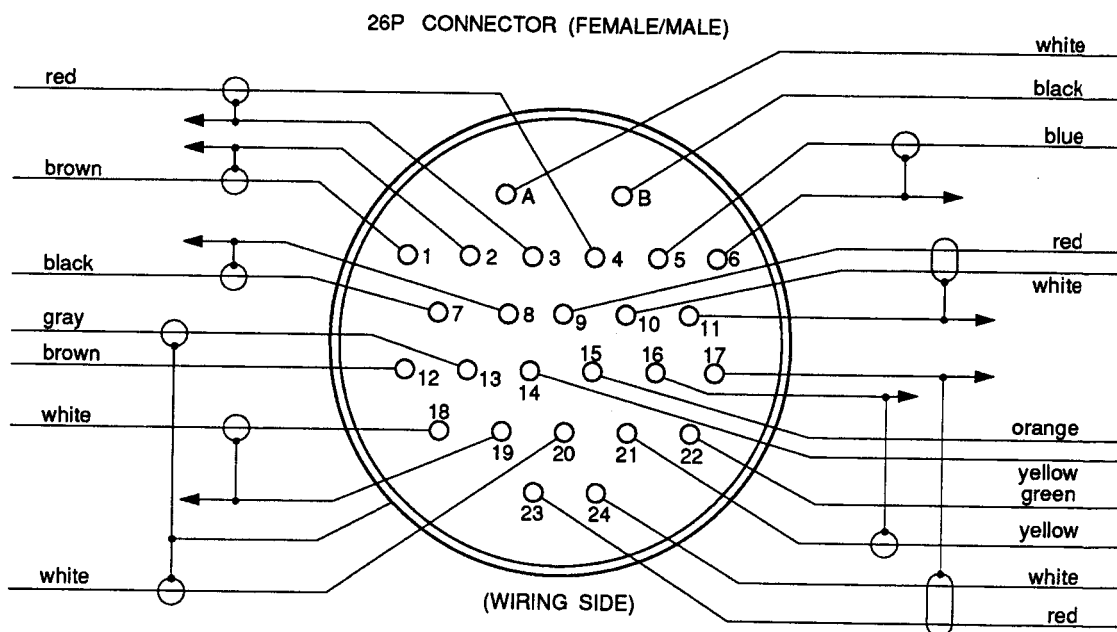
Step 5.

It can be broken up as shown in Figure.

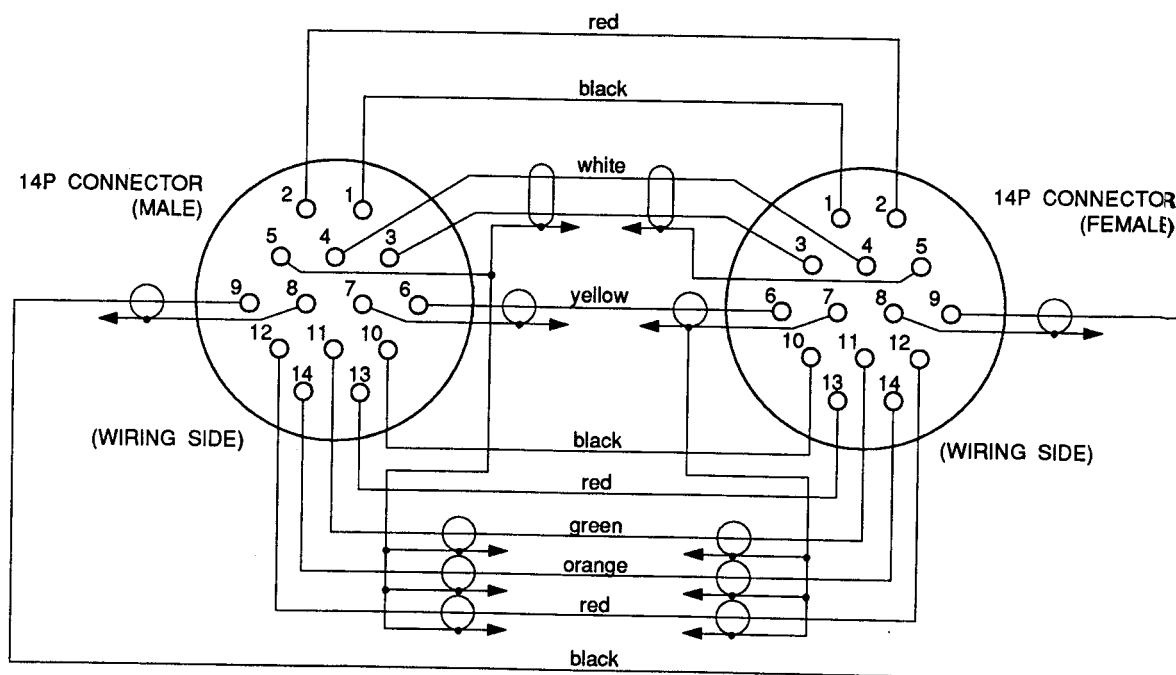


2-4-4. Cable Wiring

CCZ-An Cable (Wiring Diagram)

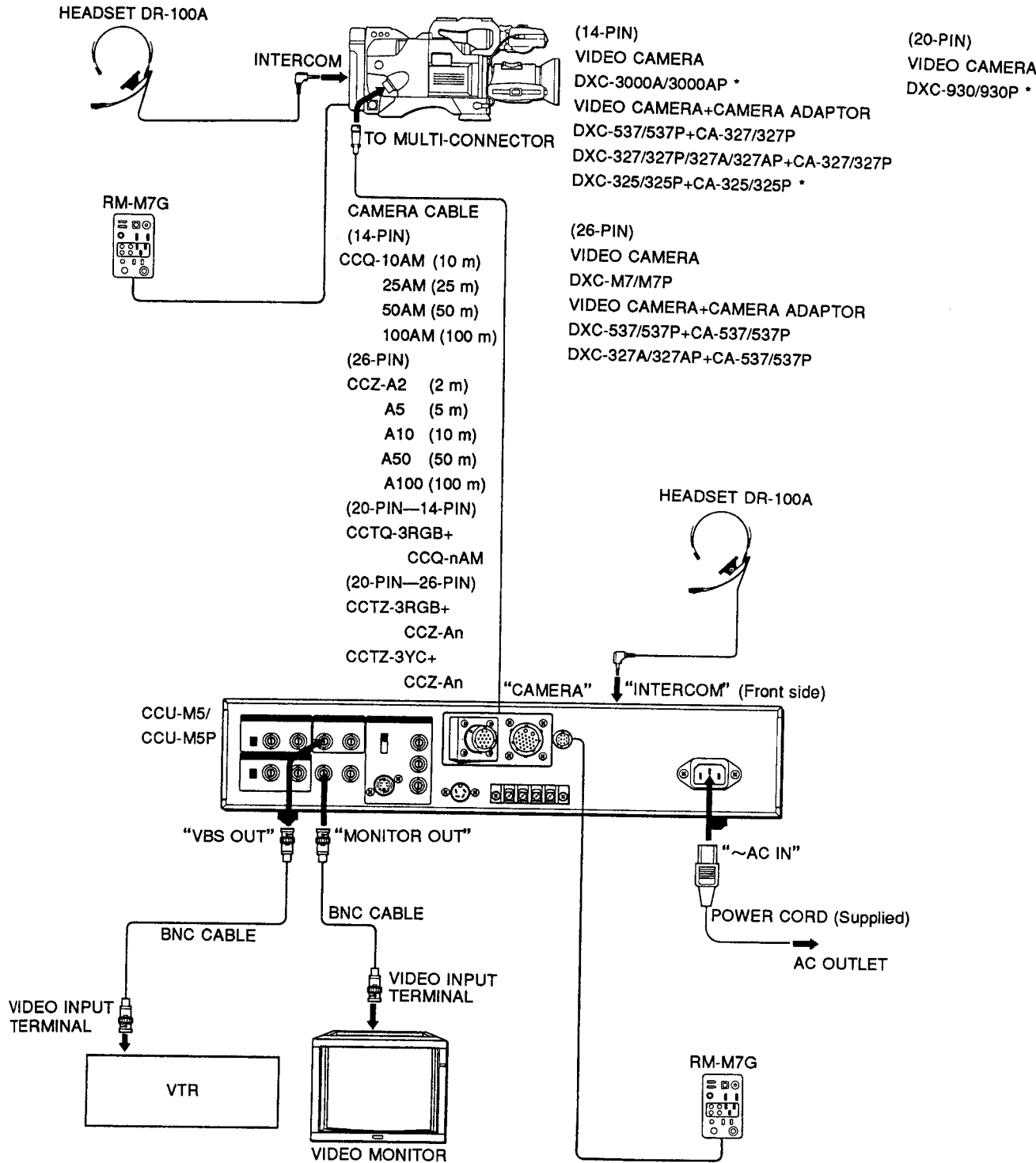


CCQ-n AM Cable (Wiring Diagram)



CCU-M5(UC)
CCU-M5P(EK)

2-5. SYSTEM EXPANSION



* RM-M7G is not available for the models such as DXC-3000A/3000AP, DXC-325/325P, and DXC-930/930P.

SECTION 3

ALIGNMENT

3-1. PREPARATION

3-1-1. Equipments Required

- DC Voltmeter
- Oscilloscope (band: 30 MHz or more)
- Audio Frequency Signal Generator (1 kHz, sine wave)
- Test Signal Generator (Signal: SWEEP signal with sync)
- CCZ Cables: 25 m (CCZ-A25 cable)×1
100 m (CCZ-A100 cable)×3
- Cable Extension Connector (CCZZ-1E)×2
- Vectorscope
- Waveform Monitor
- Color Video Camera DXC-537/537P (completely adjusted)
- Camera Adaptor CA-537/537P (completely adjusted)
- Color Monitor

3-1-2. On CCZ Cable Length

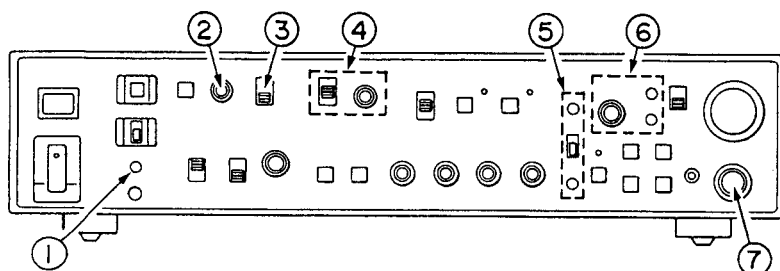
The following CCZ cables are required for CCU-M5/M5P adjustment.

Cable length: 25 m, 100 m, 200 m, 300 m

Among above cables, 200 m and 300 m cables are required to extend by using the cable extension connector CCZZ-1E.

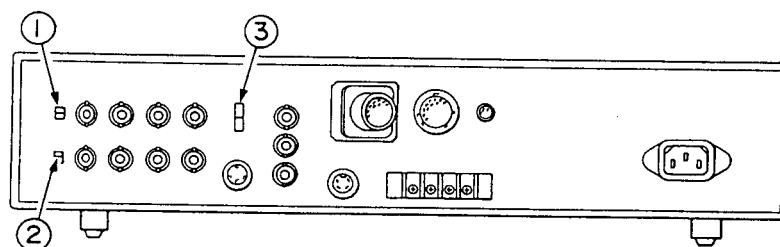
3-1-3. Initial Setting of Switches

CCU-M5/M5P Front Panel



- | | |
|--------------------------|-------------------|
| ① INTERCOM CONTROL | Mechanical Center |
| ② DETAIL CONTROL | Mechanical Center |
| ③ GAIN SW | 0 dB |
| ④ KNEE SW | PRESET |
| CONTROL | Mechanical Center |
| ⑤ PHASE SW | 0° |
| CONTROL | Mechanical Center |
| ⑥ CABLE COMP CONTROL ... | 25 |
| FINE-Y/C SW... | Mechanical Center |
| ⑦ MASTER PEDESTAL | |
| CONTROL | Mechanical Center |

CCU-M5/M5P Rear Panel



- | | |
|------------------------------------|-----|
| ① RETURN VIDEO (75Ω ON/OFF) SW ... | ON |
| ② GENLOCK (75Ω ON/OFF) SW | ON |
| ③ OUTPUT SW | RGB |

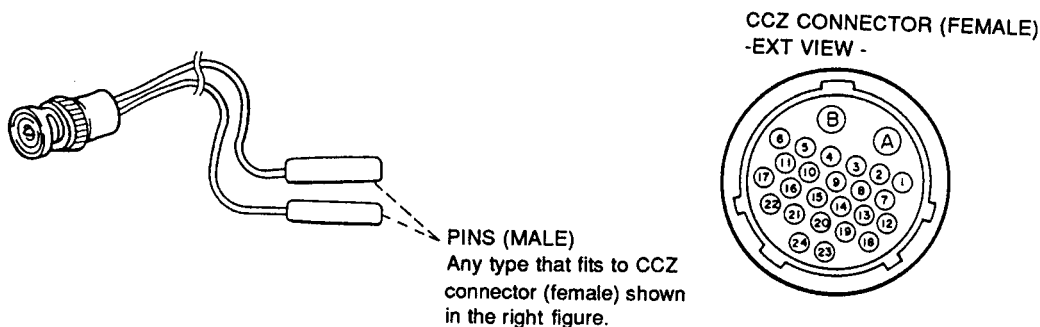
3-1-4. Making Tools

1. Preparation

- BNC connectors × 2 (Sony Part No. 1-508-898-00)
- Lead wires × 4 (Use lead wires of different color to distinguish the signal line from the GND line.)
- Pins (male) × 4 (pins which can be inserted into CCZ male connector.)

2. Making tools

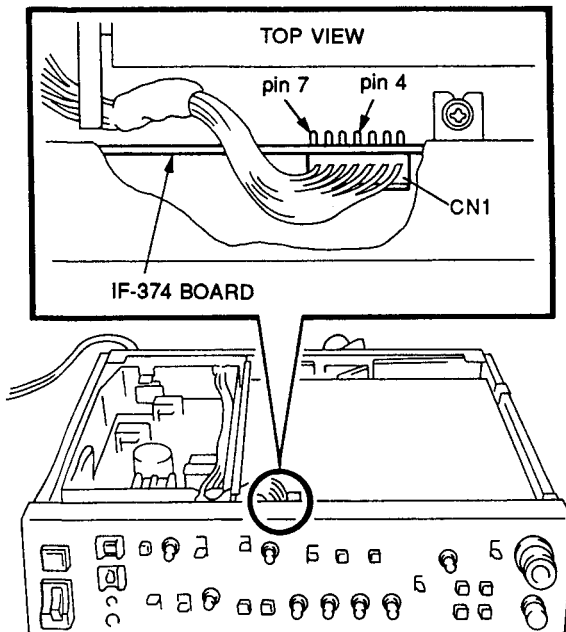
Make two tools as shown in the figure.



3-2. POWER SUPPLY SYSTEM ADJUSTMENT

Preparation:

Short pin 7 (SENS) and pin 4 (GND) of CN1 connector on the IF-374 board using the shorting clip, as for +9 V and +13 V adjustments.



3-2-1. +9 V Adjustment

Equipment: DC Voltmeter

Test point: CN201-1 (GND: 4 pin)/PS BLOCK

Adjustment point: VR301/PS BLOCK

Specification: $+9.0 \pm 0.01$ Vdc

3-2-2. +13 V Adjustment

Equipment: DC Voltmeter

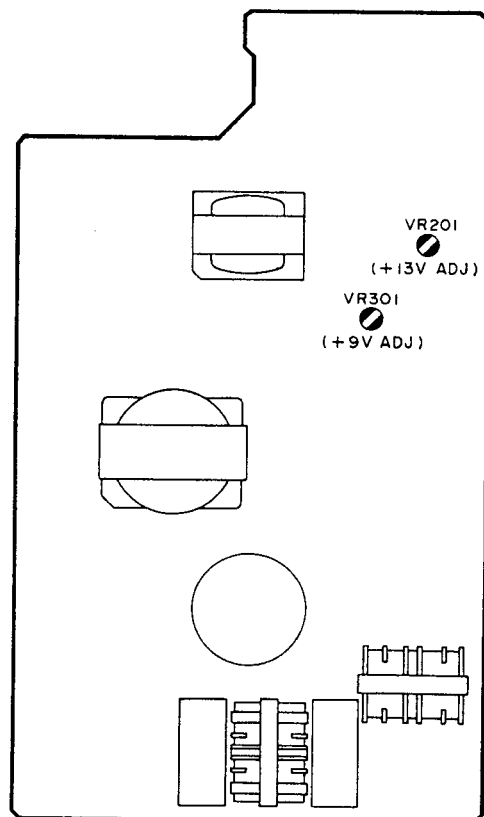
Test point: CN203-1 (GND: 3 pin)/PS BLOCK

Adjustment point: VR201/PS BLOCK

Specification: $+13.0 \pm 0.01$ Vdc

Note:

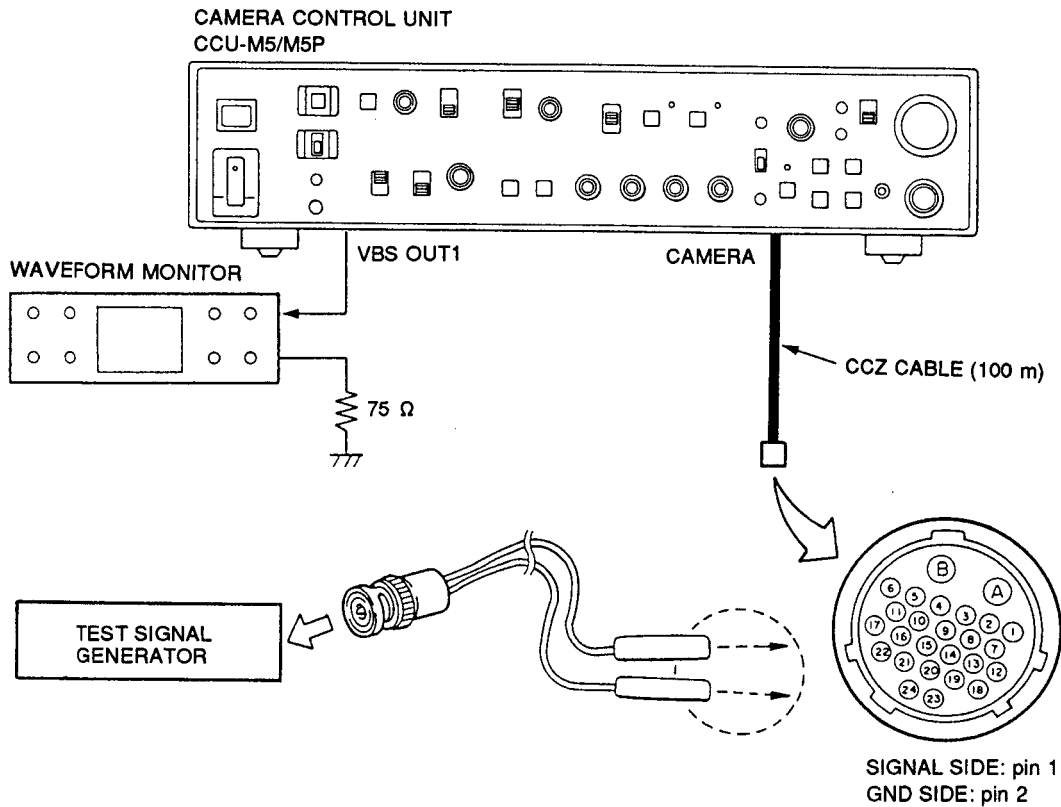
After adjustment, remove the short of CN1 connector (between pins 7 and 4) on the IF-374 board.



PS BLOCK (Component Side)

3-3. VBS VIDEO AMPLIFIER SYSTEM ADJUSTMENT

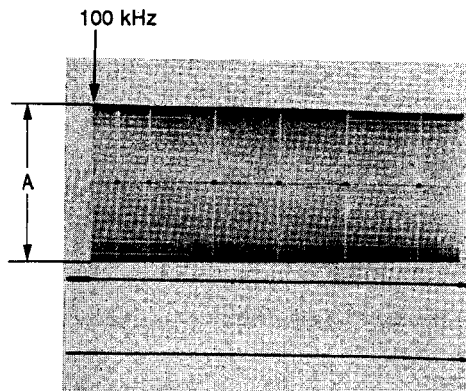
Connection diagram:



Video signal:

Output signal/test signal generator:

SWEEP signal with sync



* Measure the level "A" of 100 kHz and record it.

List of Adjustment Controls on PR-170 (N)/(P) Board

Component	Adjustment	Item	Page
RV101	VBS GAIN	3-3-1	3-5
RV102	VBS FREQ 1	3-3-2	3-6
RV103	VBS FREQ 2	3-3-3	3-6
RV104	VBS FREQ 3	3-3-4	3-6
RV201	R GAIN	3-4-1	3-8
RV202	R FREQ 1	3-4-2	3-8
RV203	R FREQ 2	3-4-3	3-9
RV204	R FREQ 3	3-4-4	3-9
RV301	G GAIN	3-4-1	3-8
RV302	G FREQ 1	3-4-2	3-8
RV303	G FREQ 2	3-4-3	3-9
RV304	G FREQ 3	3-4-4	3-9
RV401	B GAIN	3-4-1	3-8
RV402	B FREQ 1	3-4-2	3-8
RV403	B FREQ 2	3-4-3	3-9
RV404	B FREQ 3	3-4-4	3-9
RV501	SYNC CLIP LEVEL	3-5-1	3-11
RV502	GAMMA	3-5-11	3-16
RV503	BIAS-1	3-5-10	3-15
RV504	BIAS-2	3-5-10	3-15
RV505	BURST OFFSET	3-5-2	3-12
RV506	CHROMA LEVEL	3-5-12	3-16
RV507	CLAMP PULSE PHASE	3-5-8	3-13
RV508	CLAMP PULSE WIDTH	3-5-9	3-13
RV509	BURST GATE PULSE PHASE	3-5-3	3-12
RV510	BURST GATE PULSE WIDTH	3-5-4	3-12
RV511	ADVANCED SYNC PHASE	3-5-5	3-12
RV512	SYNC WIDTH	3-5-6	3-13
RV515	GAMMA SET	3-5-10	3-15
		3-5-11	3-16
RV516	1/2H ADJ	3-5-7	3-13
RV517	BURST LEVEL	3-5-12	3-16
LV501	HUE	3-5-13	3-17
LV502	SC 180° ADJ	3-5-13	3-17

3-3-1. VBS VIDEO LEVEL ADJUSTMENT

Equipment: Waveform Monitor (WFM)
CCZ cable length: 100 m

Preparation:

CABLE COMP switch/front panel→[100 m]

CABLE COMP FINE Y/C control/

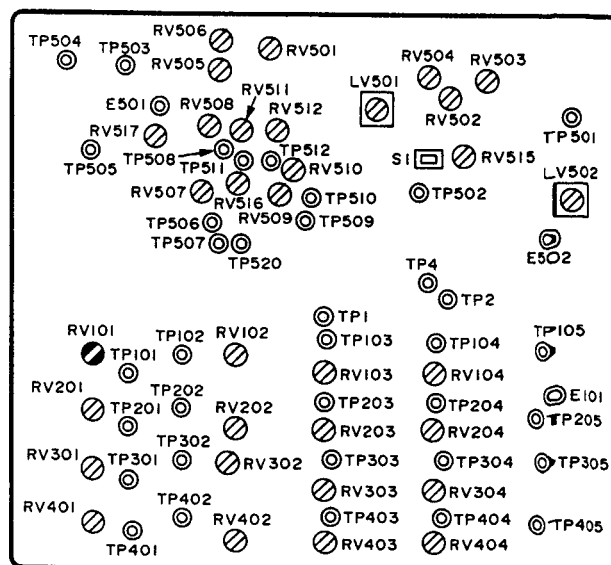
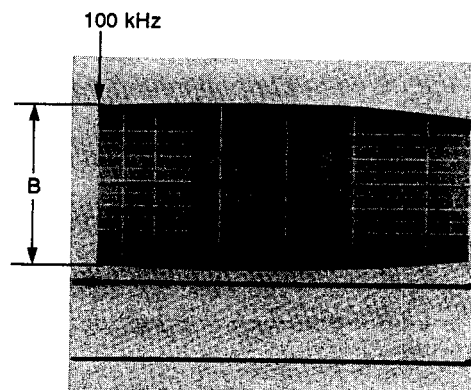
Front panel→Mechanical center

Test point: VBS OUT1 connector/Rear panel

Adjustment point: ●RV101/PR-170 (N)/(P) board

Specification: $B=A \pm 2\%$

(B...100 kHz level of output signal)



PR-170 (N)/(P) BOARD (Component Side)

3-3-2. VBS Video Cable Compensation Adjustment 1

Equipment: Waveform monitor (WFM)
CCZ cable length: 100 m

Preparation:
CABLE COMP switch/Front panel→[100 m]
CABLE COMP FINE Y/C control/
Front panel→Mechanical center

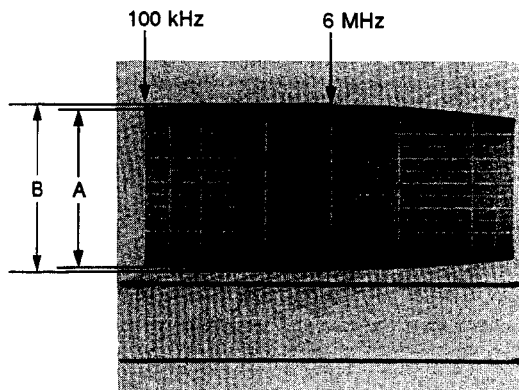
Test point: VBS OUT1 connector/Rear panel

Adjustment point: RV102/PR-170 (N)/(P) board

Specification: $B=A \pm 2\%$

(A...100 kHz level of output signal)

(B...6 MHz level of output signal)



3-3-4. VBS Video Cable Compensation Adjustment 3

Equipment: Waveform monitor (WFM)
CCZ cable length: 300 m

Preparation:
CABLE COMP switch/Front panel→[300 m]
CABLE COMP FINE Y/C control/
Front panel→Mechanical center

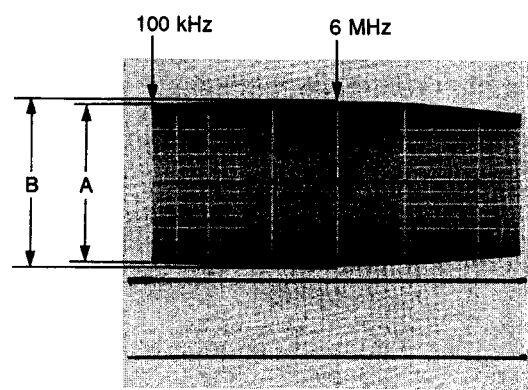
Test point: VBS OUT1 connector/Rear panel

Adjustment point: RV104/PR-170 (N)/(P) board

Specification: $B=A \pm 2\%$

(A...100 kHz level of output signal)

(B...6 MHz level of output signal)



3-3-3. VBS Video Cable Compensation Adjustment 2

Equipment: Waveform Monitor (WFM)
CCZ cable length: 200 m

Preparation:
CABLE COMP switch/Front panel→[200 m]
CABLE COMP FINE Y/C control/
Front panel→Mechanical center

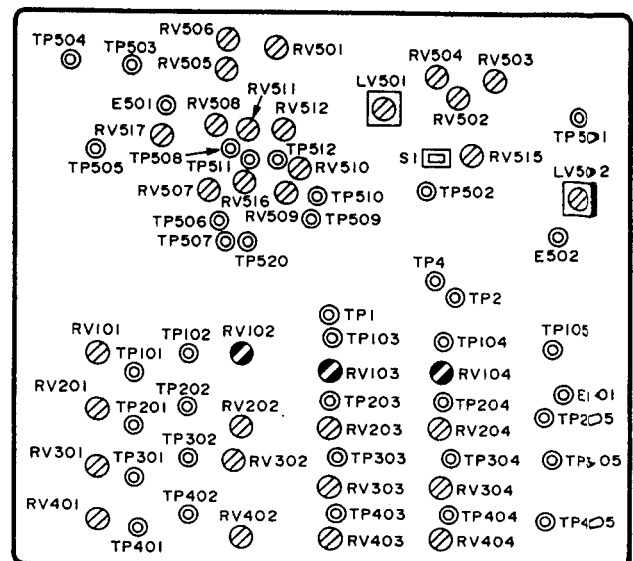
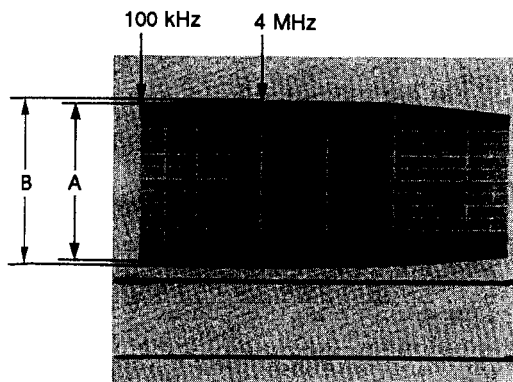
Test point: VBS OUT1 connector/rear panel

Adjustment point: RV103/PR-170 (N)/(P) board

Specification: $B=A \pm 2\%$

(A...100 kHz level of output signal)

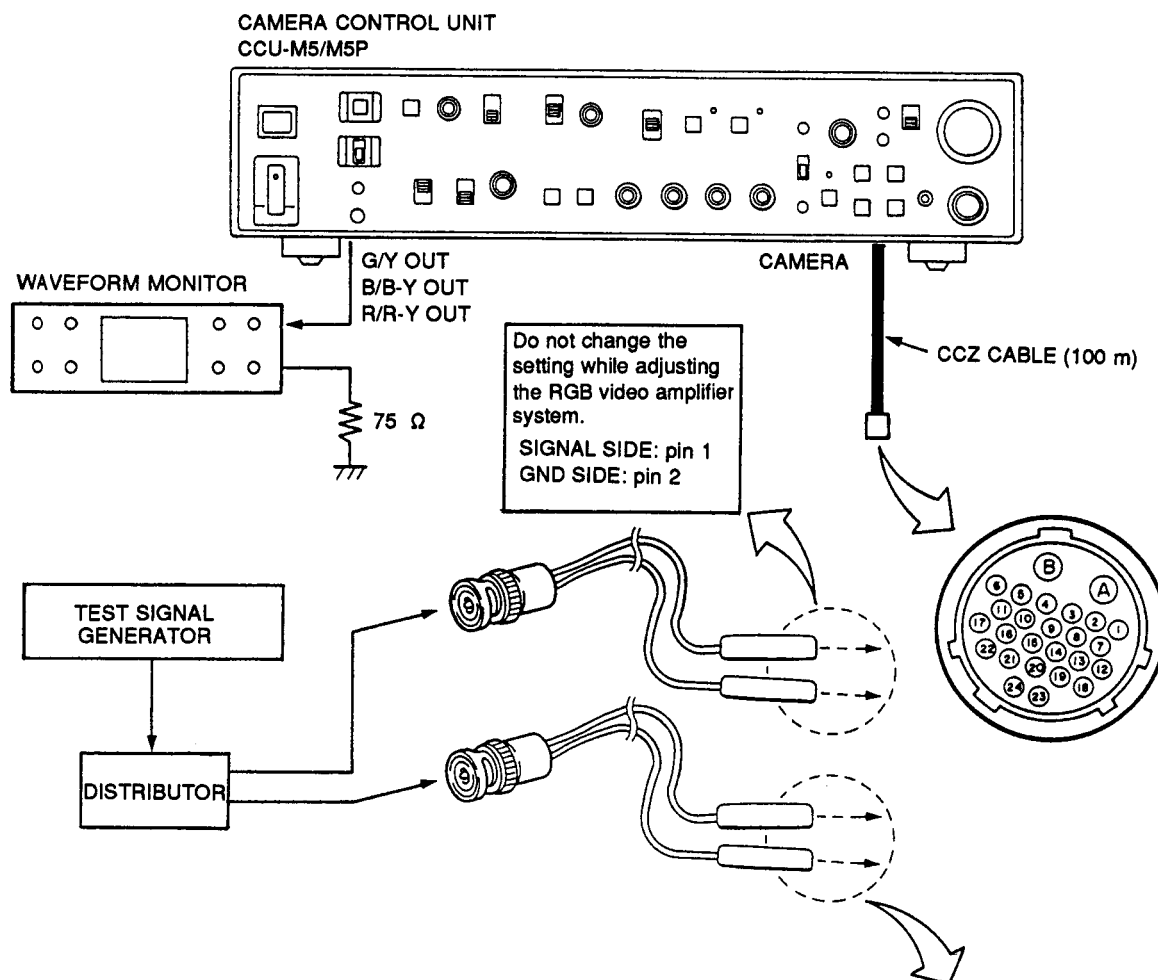
(B...4 MHz level of output signal)



PR-170 (N)/(P) BOARD (Component Side)

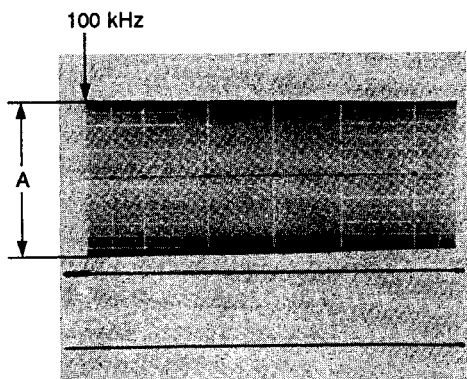
3-4. RGB VIDEO AMPLIFIER ADJUSTMENT

Connection diagram:



Video signal:

Output signal of distributor: SWEEP signal with sync



* Measure the level "A" of 100 kHz and record it.

• Test signal input pin

	Pin No. (signal side)	Pin No. (GND side)
R-ch	pin 5	pin 6
G-ch	pin 4	pin 3
B-ch	pin 7	pin 8

3-4-1. RGB Video Level Adjustment

Equipment: Waveform monitor (WFM)
CCZ cable length: 100 m

Preparation:

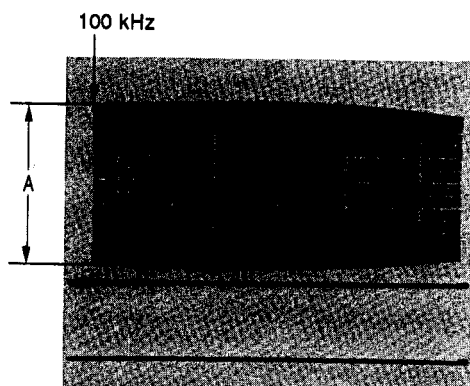
1. Test signal input pin No. of CCZ connector
Refer to page 3-7 as for pin Nos.
2. CABLE COMP switch/Front panel→[100 m]
3. Y/C→→RGB→→R-Y, Y, B-Y switch/
Rear panel→ "RGB"

Adjustment procedure:

Adjust the level by each system of Rch, Gch, and Bch as shown below.

	Test point/ Rear panel	Adjustment point/ PR-170(N)/(P) board	Specification
R-ch	R/R-Y OUT connector	RV201	$B=A \pm 2\%$
G-ch	G/Y OUT connector	RV301	$B=A \pm 2\%$
B-ch	B/B-Y OUT connector	RV401	$B=A \pm 2\%$

(A...100 kHz level of output signal from distributor)



3-4-2. RGB Video Cable Compensation Adjustment 1

Equipment: Waveform monitor (WFM)
CCZ cable length: 100 m

Preparation:

1. Test signal input pin No. of CCZ connector
Refer to page 3-7 as for pin Nos.
2. CABLE COMP switch/Front panel→[100 m]
3. Y/C→→RGB→→R-Y, Y, B-Y switch/
Rear panel→ "RGB"

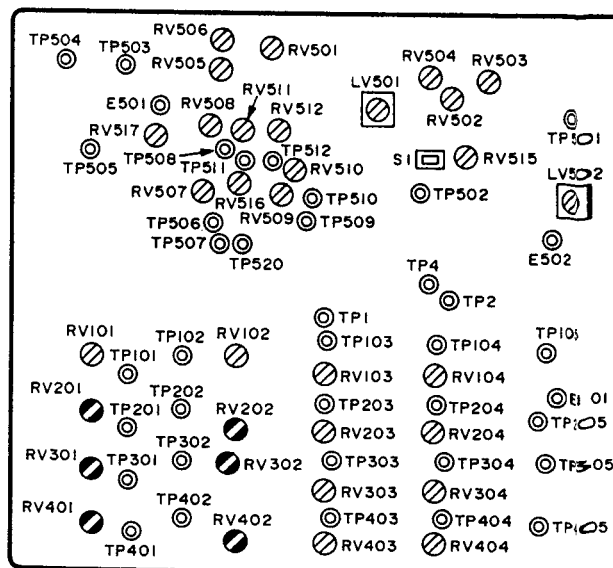
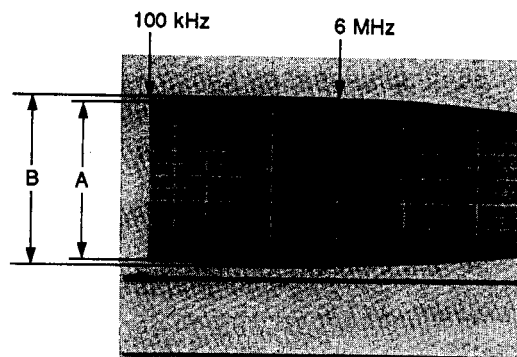
Adjustment procedure:

Adjust the level by each system of Rch, Gch, and Bch as shown below.

	Test point/ PR-170 (N)/(P) board	Adjustment point/ PR-170 (N)/(P) board	Specification
R-ch	R/R-Y OUT connector	RV202	$B=A \pm 2\%$
G-ch	G/Y OUT connector	RV302	$B=A \pm 2\%$
B-ch	B/B-Y OUT connector	RV402	$B=A \pm 2\%$

(A...100 kHz level of output signal)

(B...6 MHz level of output signal)



PR-170 (N)/(P) BOARD (Component Side)

3-4-3. RGB Video Cable Compensation Adjustment 2

Equipment: Waveform monitor (WFM)
CCZ cable length: 200 m

Preparation:

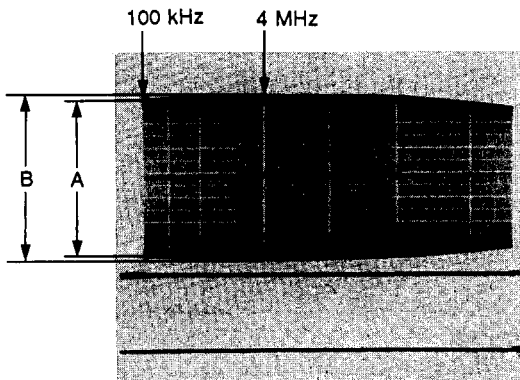
1. Test signal input pin No. of CCZ connector
Refer to page 3-7 as for pin Nos.
2. CABLE COMP switch/Front panel→[200 m]
3. Y/C←→RGB←→R-Y, Y, B-Y switch/
Rear panel→ "RGB"

Adjustment procedure:

Adjust the level by each system of Rch, Gch, and Bch as shown below.

	Test point/ PR-170 (N)/(P) board	Adjustment point/ PR-170 (N)/(P) board	Specification
R-ch	R/R-Y OUT connector	RV203	$B=A \pm 2\%$
G-ch	G/Y OUT connector	RV303	$B=A \pm 2\%$
B-ch	B/B-Y OUT connector	RV403	$B=A \pm 2\%$

(A...100 kHz level of output signal)
(B...4 MHz level of output signal)



3-4-4. RGB Video Cable Compensation Adjustment 3

Equipment: Waveform monitor (WFM)
CCZ cable length: 300 m

Preparation:

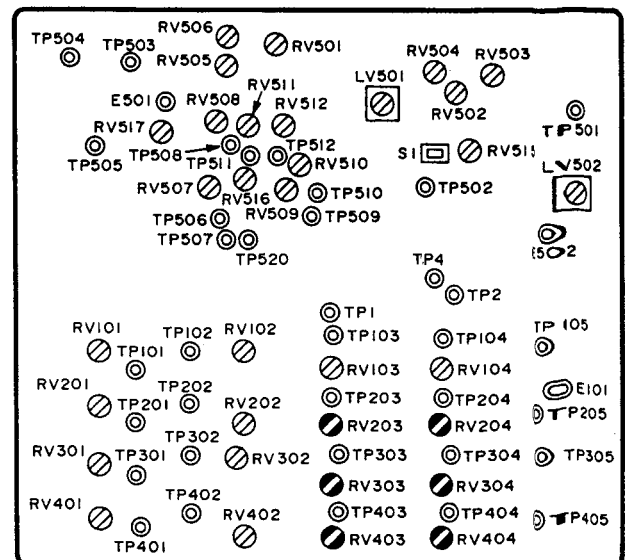
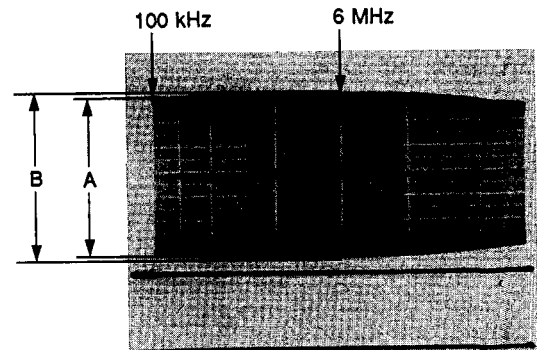
1. Test signal input pin No. of CCZ connector
Refer to page 3-7 as for pin Nos.
2. CABLE COMP switch/Front panel→[300 m]
3. Y/C←→RGB←→R-Y, Y, B-Y switch/
Rear panel→ "RGB"

Adjustment procedure:

Adjust the level by each system of Rch, Gch, and Bch as shown below.

	Test point/ PR-170 (N)/(P) board	Adjustment point/ PR-170 (N)/(P) board	Specification
R-ch	R/R-Y OUT connector	RV204	$B=A \pm 2\%$
G-ch	G/Y OUT connector	RV304	$B=A \pm 2\%$
B-ch	B/B-Y OUT connector	RV404	$B=A \pm 2\%$

(A...100 kHz level of output signal)
(B...6 MHz level of output signal)

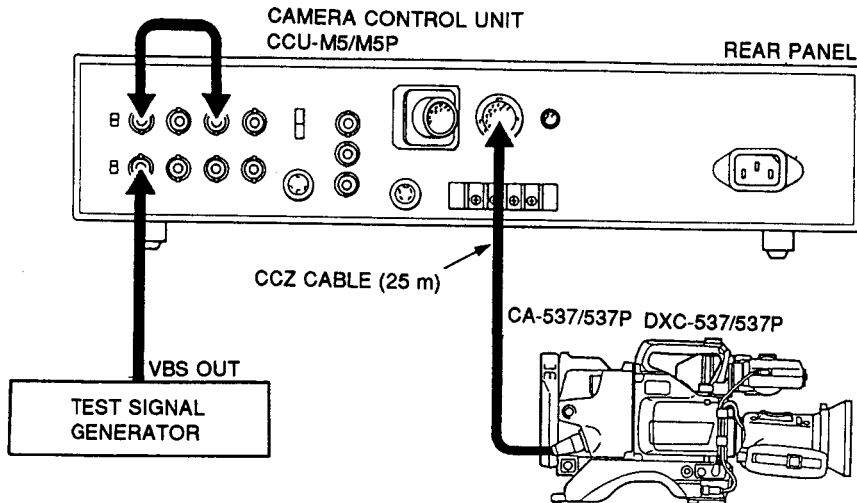


PR-170 (N)/(P) BOARD (Component Side)

3-5. RETURN VIDEO SYSTEM (PR-170 (N)/(P) BOARD) ADJUSTMENT

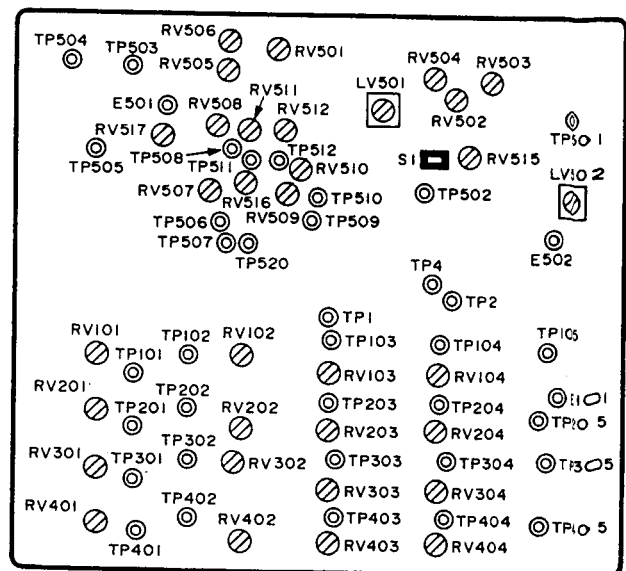
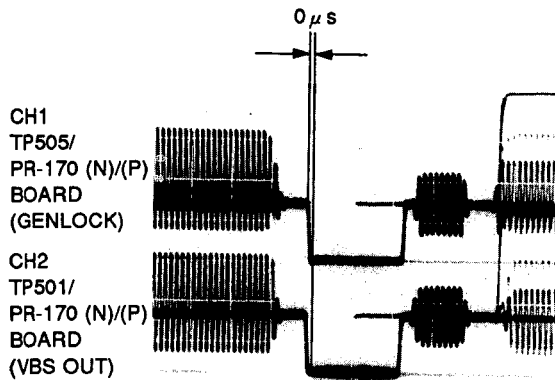
Connection diagram:

(Perform the adjustment in the following connection as for sections 3-5-1 to 3-5-9.)



Preparation:

1. Set CABLE COMP switch to "25 m" up to section 3-5-9.
2. Input a color bar signal.
3. Set S1 (ADJ/OPE) switch to "ADJ" side.
4. While observing the oscilloscope, set the "H PHASE" control (front panel) of CCU to match the phase difference level of GEN LOCK and VBS OUT to $0 \mu s$. Be sure not to touch the H PHASE control after this.



PR-170 (N)/(P) BOARD (Component Side)

3. ALIGNMENT

Test point: See Fig. 1.

3. ALIGNMENT

3. ALIGNMENT

3. ALIGNMENT



3. ALIGNMENT

3. ALIGNMENT

3. ALIGNMENT

3. ALIGNMENT

3. ALIGNMENT

3. ALIGNMENT



3. ALIGNMENT

3. ALIGNMENT



3. ALIGNMENT



3. ALIGNMENT

3-5-6. SYNC Cleaning Pulse Width Adjustment

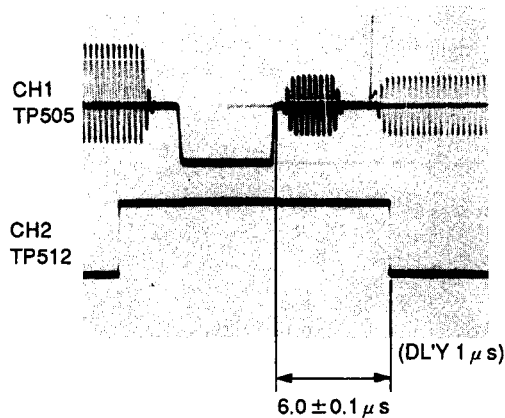
Equipment: Dual trace oscilloscope

Test point: CH 1: TP505 (GND: E501)/
PR-170 (N)/(P) board
CH 2: TP512 (GND: E501)/
PR-170 (N)/(P) board

Trigger: HD (TP506/PR-170 (N)/(P) board)

Adjustment point: RV512/PR-170 (N)/(P) board

Specification: $6.0 \pm 0.1 \mu s$



3-5-7. 1/2 Killer Adjustment

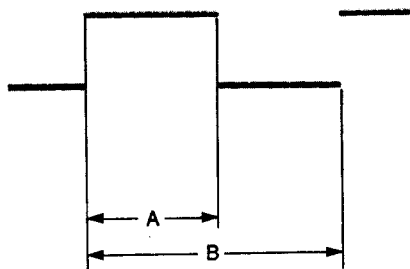
Equipment: Oscilloscope

Test point: TP520 (GND: E501)/PR-170 (N)/(P) board

Adjustment point: RV516/PR-170 (N)/(P) board

Specification: $B/A = 55 \pm 10\%$

- Adjust the H. VARIABLE control of oscilloscope and match the output waveform A for 10 graduations.



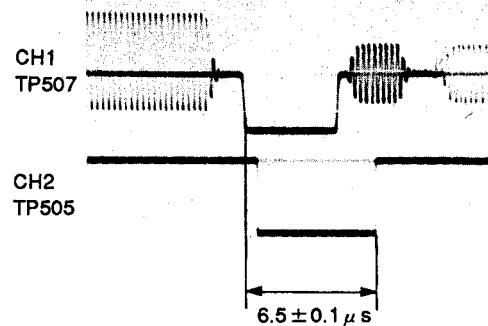
3-5-8. Clamp Pulse Phase Adjustment

Equipment: Oscilloscope

Test point: CH 1: TP507 (GND: E501)/
PR-170 (N)/(P) board
CH 2: TP505 (GND: E501)/
PR-170 (N)/(P) board

Adjustment point: RV507/PR-170 (N)/(P) board

Specification: $6.5 \pm 0.1 \mu s$



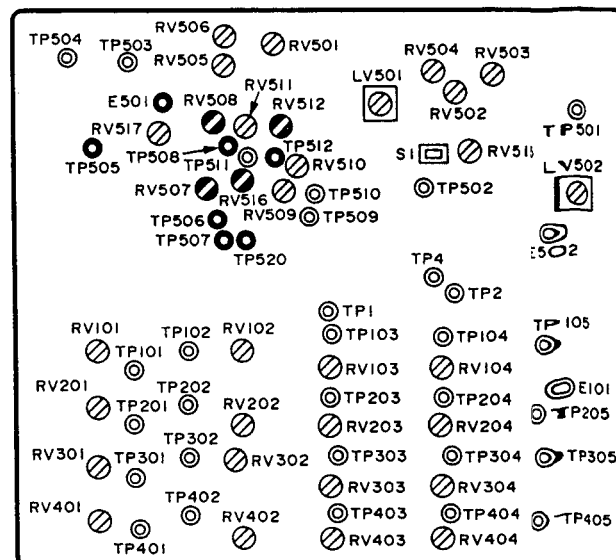
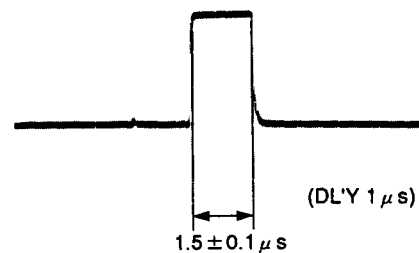
3-5-9. Clamp Pulse Width Adjustment

Equipment: Oscilloscope

Test point: TP508 (GND: E501)/PR-170 (N)/(P) board

Adjustment point: RV508/PR-170 (N)/(P) board

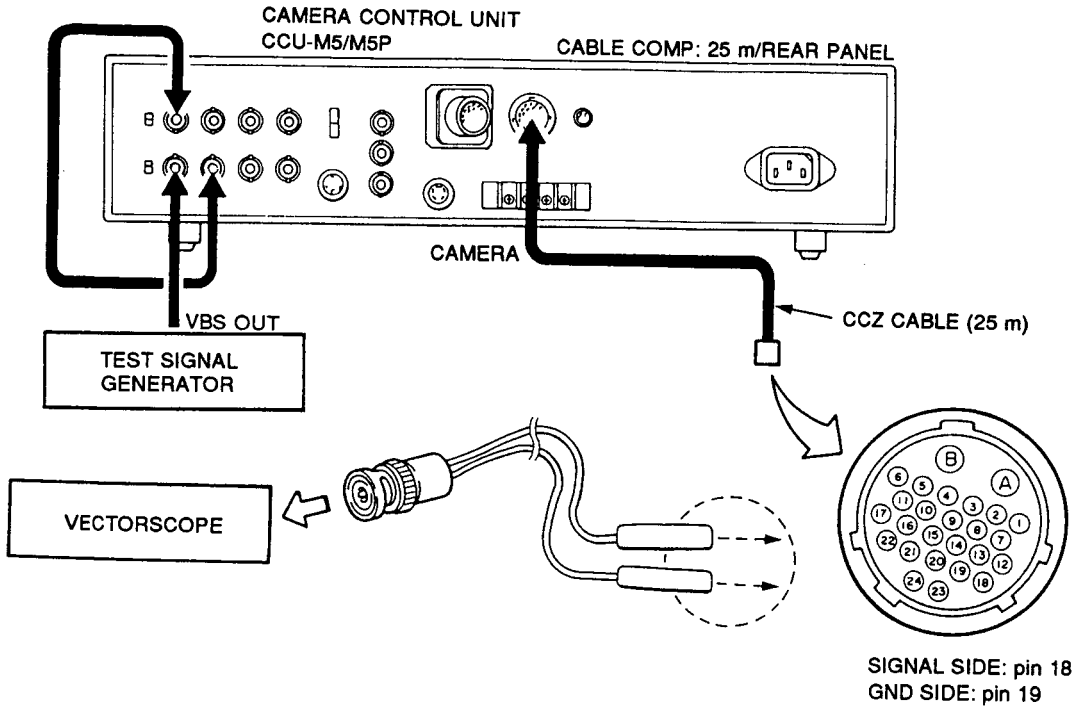
Specification: $1.5 \pm 0.1 \mu s$



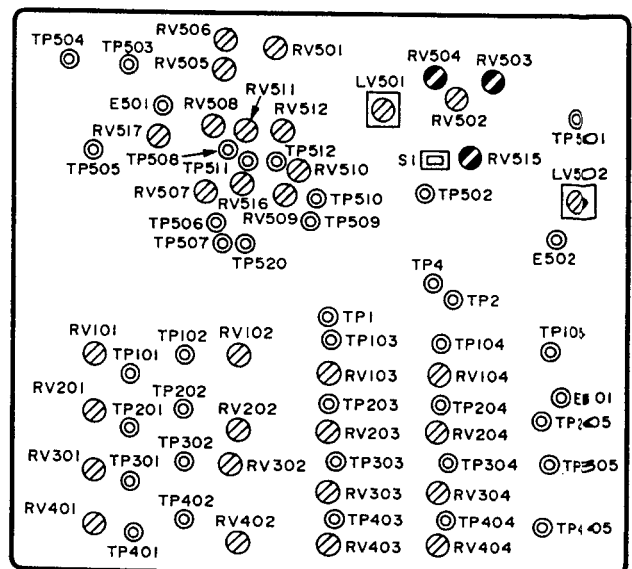
PR-170 (N)/(P) BOARD (Component Side)

Connection diagram:

(Perform the adjustment in the following connection as for sections 3-5-1 to 3-5-9.)

**Preparation:**

1. Set 75Ω "ON/OFF" switch (rear panel side) of GENLOCK IN/OUT to OFF.
2. Input a color bar signal.



PR-170 (N)/(P) BOARD (Component Side)

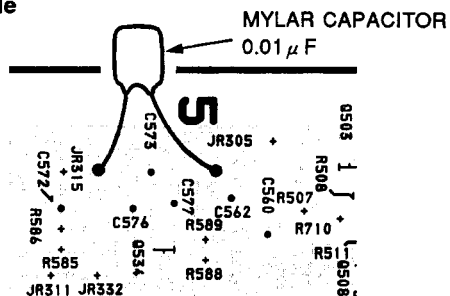
3-5-10. BIAS Adjustment

Step 1. BIAS-1 adjustment

Note:

Perform this adjustment after connecting the pin 5 of IC15/ PR-170 (N)/(P) board (address: L5) to GND via Mylar capacitor of $0.01 \mu F$ in order to eliminate the output from the 90° phase shifter.

Solder side



Equipment: Vectorscope

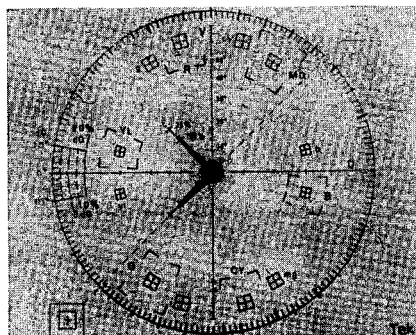
Test point: CCZ connector pin 18
(GND: CCZ connector pin 19)

Adjustment point: RV503/PR-170 (N)/(P) board

Adjustment procedure:

When RV515 (GAMMA SET) /PR-170 (N)/(P) board is turned fully clockwise and counterclockwise, each chroma level becomes low.

Adjust RV503 so that the chroma levels become minimum and same level when RV515 is turned fully clockwise and counterclockwise.

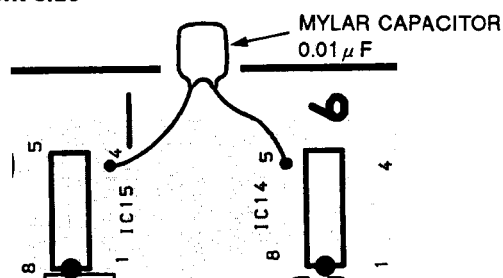


Step 2. BIAS-2 adjustment

Note:

Perform this adjustment by connecting the pin 5 of IC14/ PR-170 (N)/(P) board (address: L5) to GND via Mylar capacitor of $0.01 \mu F$ in order to eliminate the output from the 90° phase shifter.

Component side



Equipment: Vectorscope

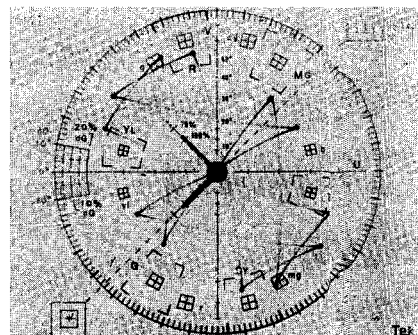
Test point: CCZ connector pin 18
(GND: CCZ connector pin 19)

Adjustment point: RV504/PR-170 (N)/(P) board

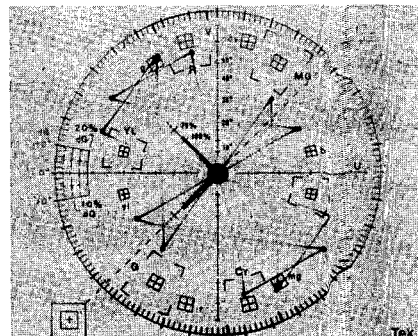
Adjustment procedure:

1. Set RV515 (GAMMA SET)/PR-170 (N)/(P) board to the mechanical center, and adjust temporarily with RV504 so that the chroma level becomes minimum.
2. Adjust RV504 so that the chroma levels when RV515 is turned fully clockwise and counterclockwise become the same.

When fully counterclockwise



When fully clockwise



Note:

After adjustment, disconnect the Mylar capacitor of $0.01 \mu F$.
RV515 → Mechanical center

3-5-11. Gamma Adjustment

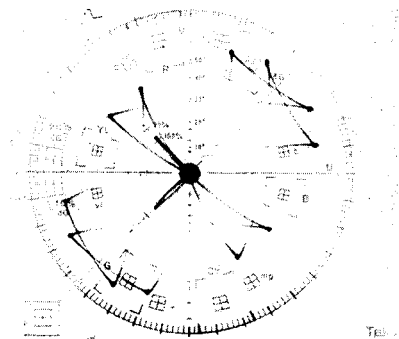
Equipment: Vectorscope

Test point: CCZ connector pin 18
(GND: CCZ connector pin 19)

Adjustment point: ⚙RV502/PR-170 (N)/(P) board

Adjustment procedure:

Adjust ⚙RV502 so that the chroma levels become the same when ⚙RV515 (GAMMA SET) is set to the mechanical center, fully clockwise, or fully counterclockwise.



Note:

After adjustment, set as follows.

⚙RV515→Mechanical center

S1 (ADJ/OPE) switch→OPE position

3-5-12. Chroma Level Adjustment

Equipment: Vectorscope

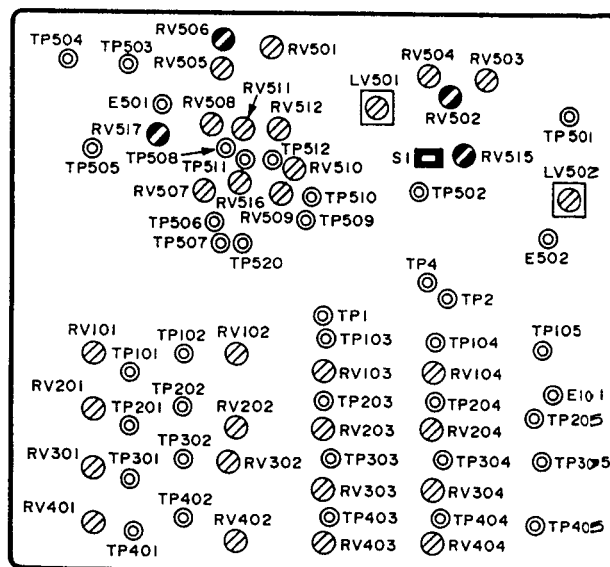
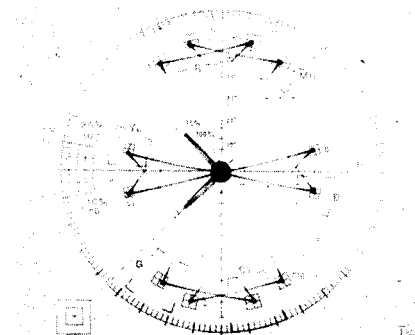
Test point: CCZ connector pin 18
(GND: CCZ connector pin 19)

Adjustment point: ⚙RV517 (burst level)
⚙RV506 (chroma level)

Specification: Burst level $75 \pm 5 \%$
Within the chroma spot "田"

Adjustment procedure:

1. Adjust the "PHASE" control of the vectorscope so that the burst spot of the vectorscope is located on the 75 % axis.
2. Adjust ⚙RV506 so that the chroma spot is located within the area "田" specified by each color.
3. Adjust ⚙RV517 so that the burst spot is located on the 75 % axis.



PR-170 (N)/(P) BOARD (Component Side)

3-5-13. SC Phase Adjustment

Equipment: Vectorscope

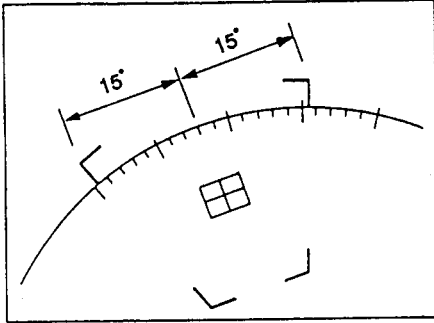
Test point: CCZ connector pin 18

(GND: CCZ connector pin 19)

Adjustment point: ⦿LV502/PR-170 (N)/(P) board

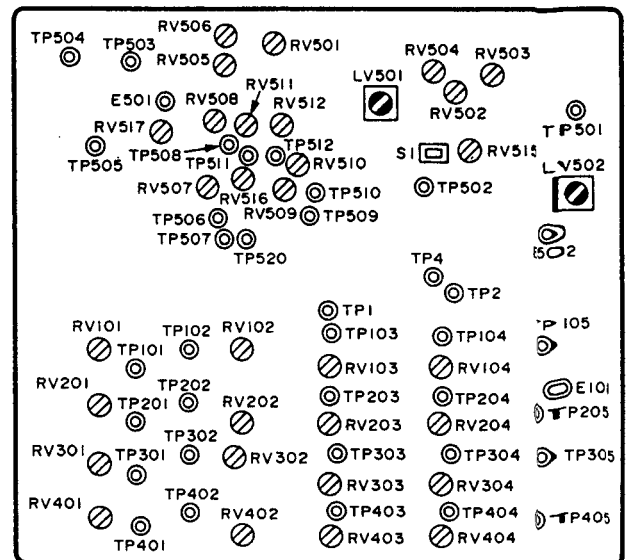
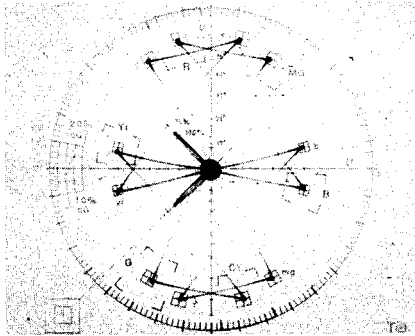
⦿LV501/PR-170 (N)/(P) board

Specification: $\pm 15^\circ$ against the frame center.



Adjustment procedure:

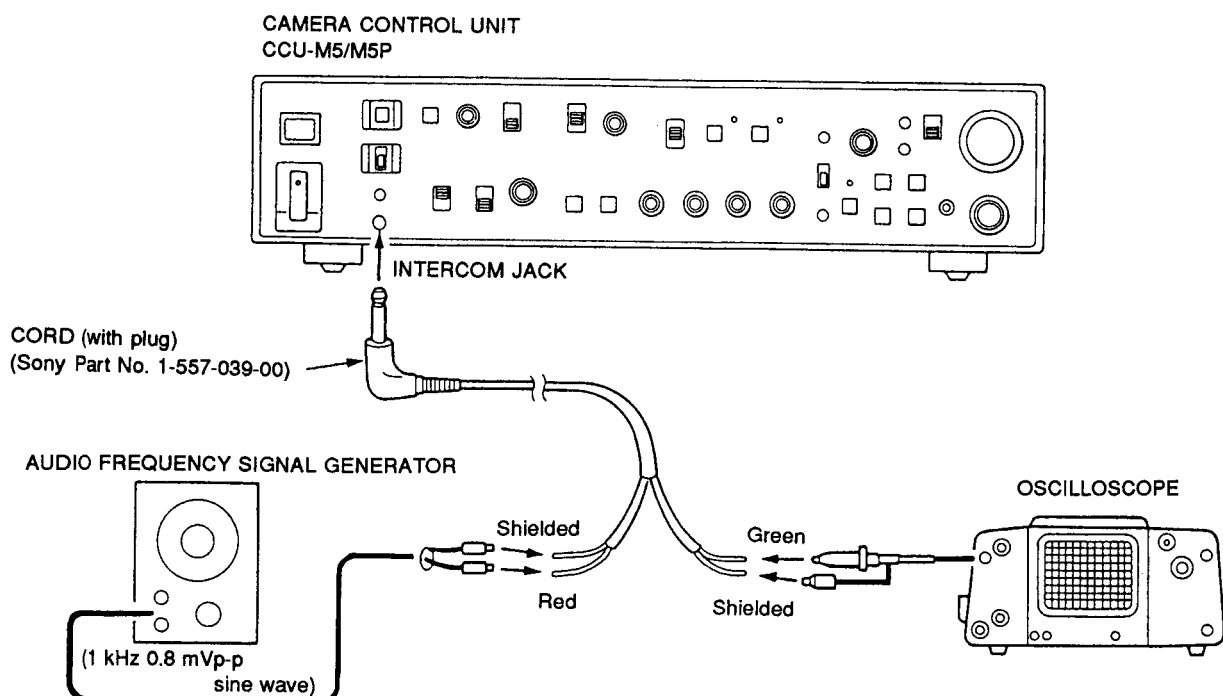
1. Turn ⦿LV502 (0/ π PHASE) fully clockwise and turn counterclockwise twice.
2. Adjust ⦿LV501 so that only the vector phase is located within the specified area ($\pm 15^\circ$) of each color.



PR-170 (N)/(P) BOARD (Component Side)

3-6. INTERCOM SYSTEM ADJUSTMENT

Connection diagram:



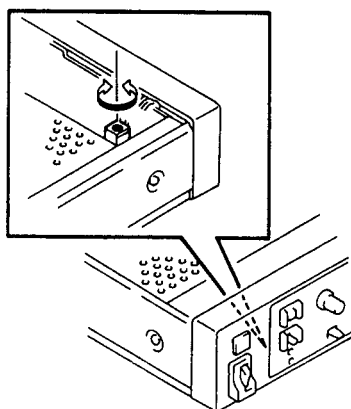
3-6-1. INCOM SIDE TONE Adjustment

Preparation:

- INTERCOM control/front panel → Clockwise
- RV12/IF-374 board → Fully counterclockwise

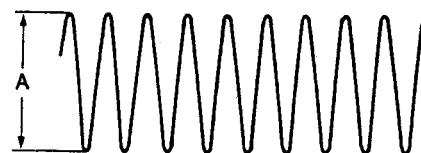
Equipment: Oscilloscope

Test point: INTERCOM jack output/front panel

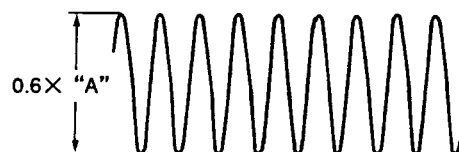


Adjustment procedure:

1. Measure the level "A" of the INTERCOM jack output.



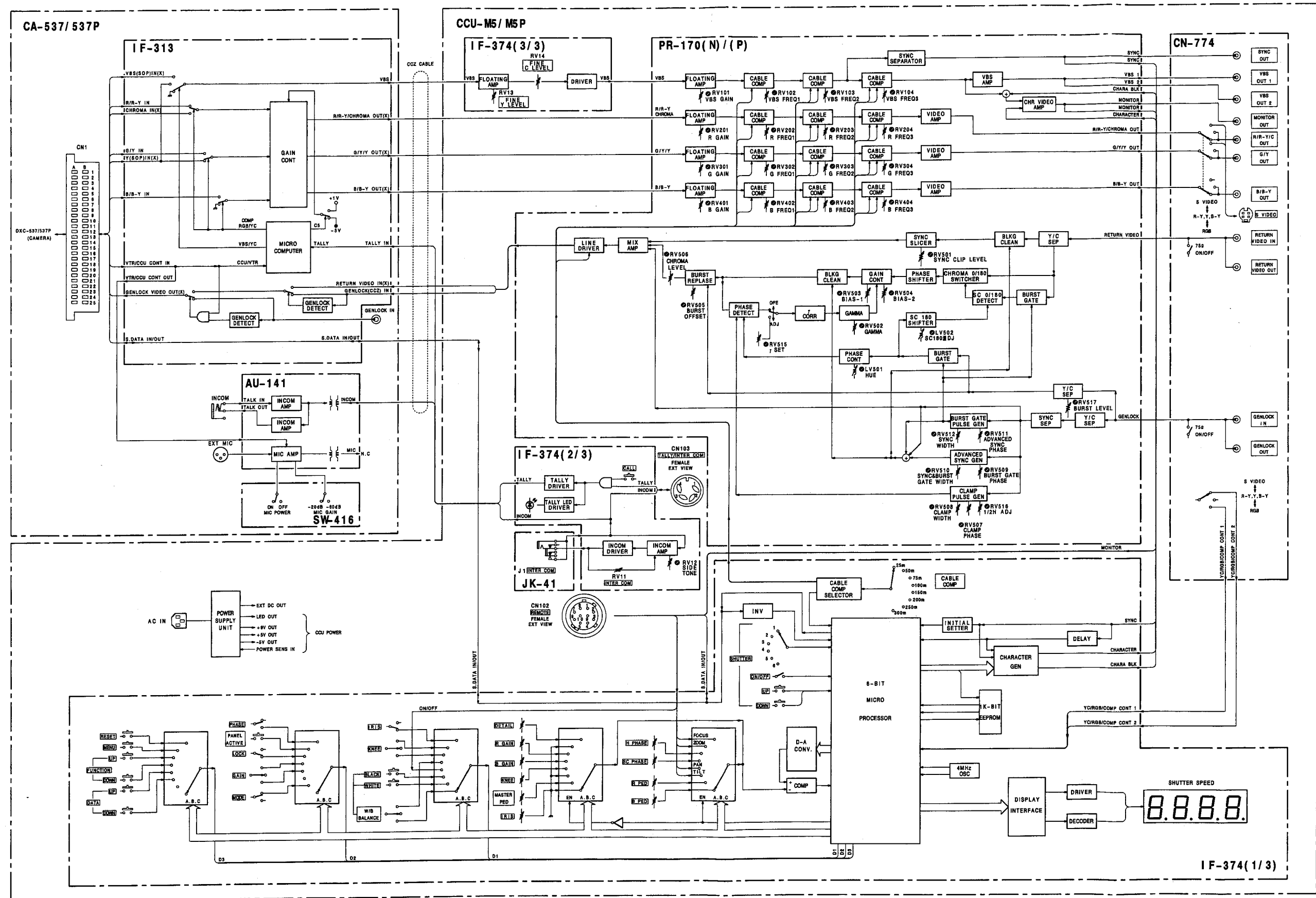
2. Adjust RV12/IF-374 board so that the level of INTERCOM jack output becomes 60 % of the level "A" in step 1.



SECTION A BLOCK DIAGRAMS

OVERALL BLOCK OVERALL BLOCK

OVERALL



CCU-M5 (J,UC)
CCU-M5P(EK)

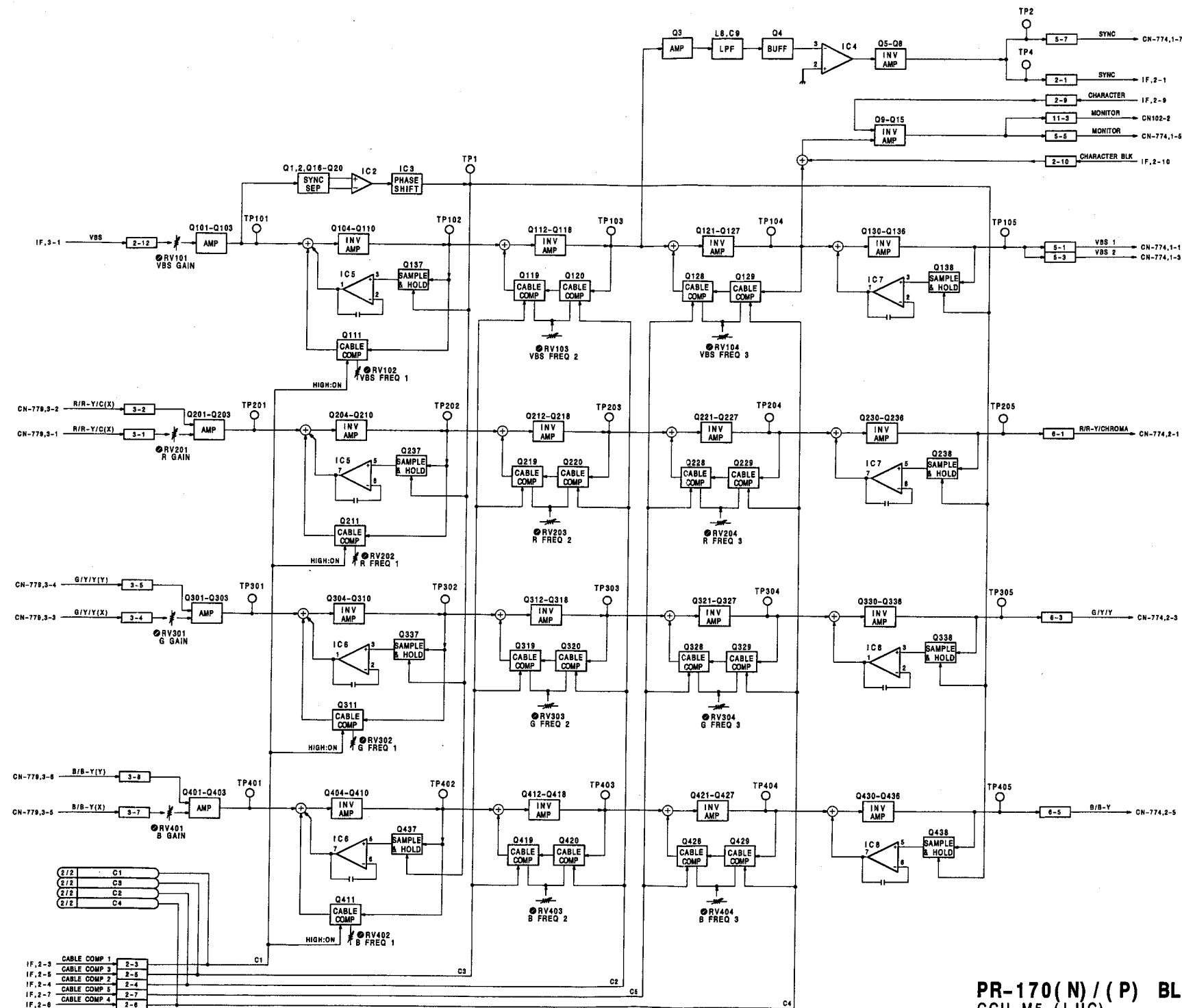
A-1

A-1

OVERALL BLOCK
CCU-M5 (J,UC)
CCU-M5P(EK)
LYNCH-COLOR

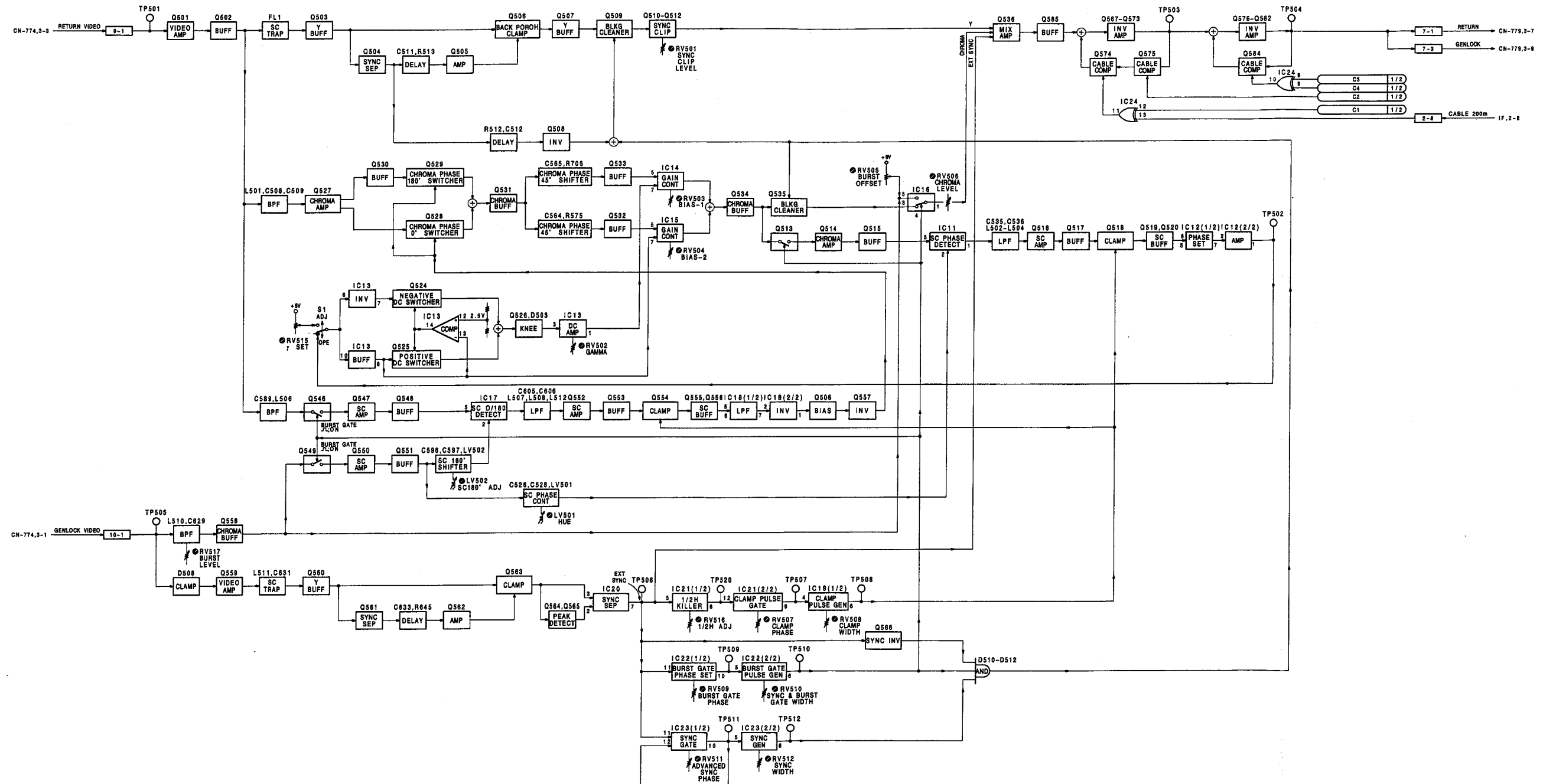
PR-170(N)/(P)BLOCK(1/2) PR-170(N)/(P)BLOCK(1/2)

PR-170(N)/(P)BLOCK(1/2)



PR-170(N)/(P) BLOCK(1/2)
CCU-M5 (J,UC)
CCU-M5P(EK)
E-150016-01/1701010000

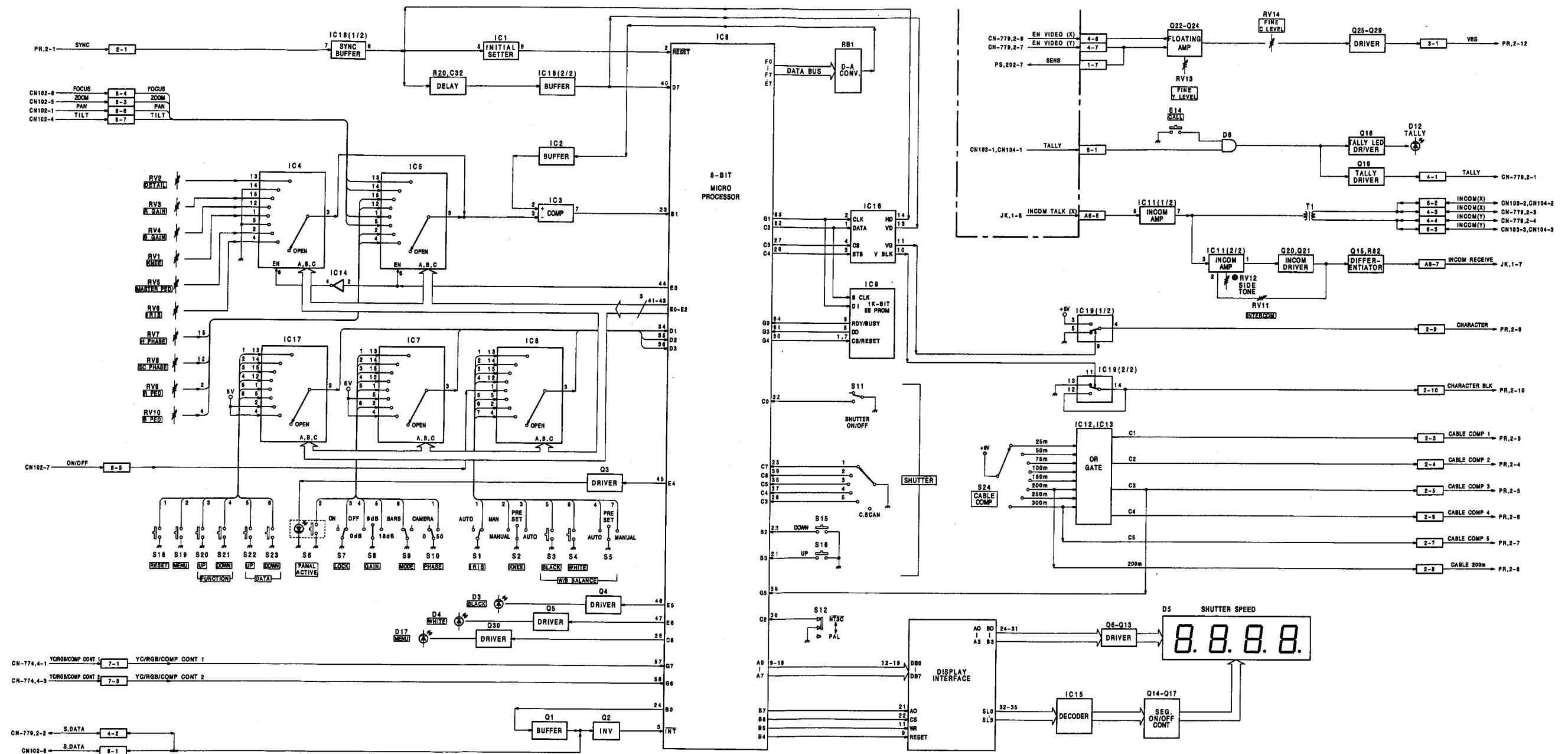
PR-170(N)/(P)BLOCK(2/2)



PR-170(N)/(P) BLOCK(2/2)
CCU-M5 (J,UC)
CCU-M5P(EK)
R-170(N)/(P)BLOCK(2/2)

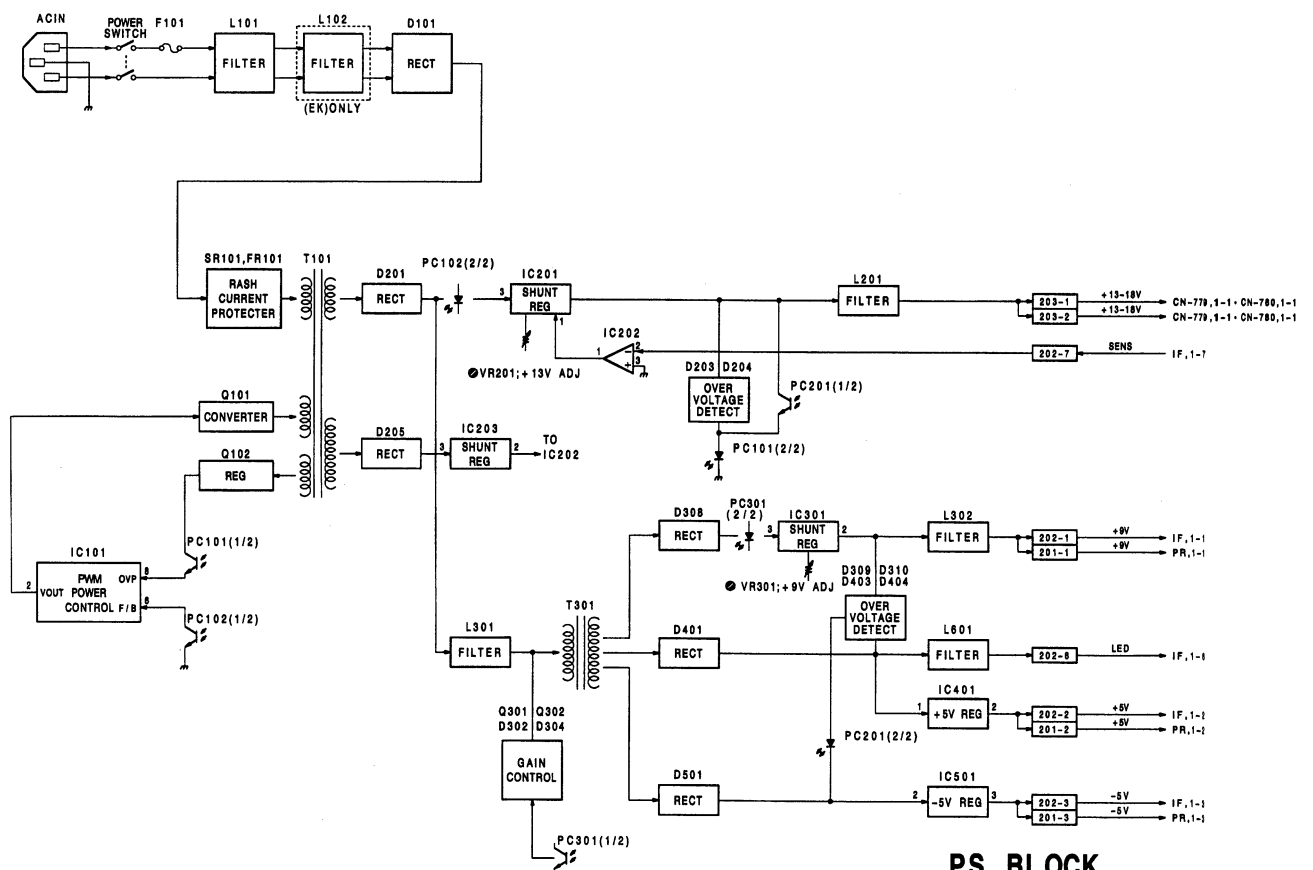
IF-374 BLOCK IF-374 BLOCK

IF374 BLOCK



IF-374 BLOCK
CCU-M5 (J,UC)
CCU-M5P(EK)
B-Y COMB-157410-0000

POWER SUPPLY BLOCK



PS BLOCK
CCU-M5 (J,UC)
CCU-M5P(EK)
8-YCCUM5-PSBLOCKA

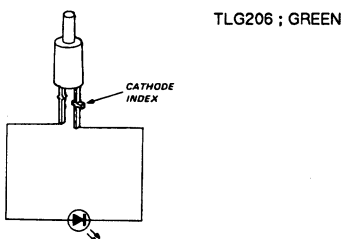
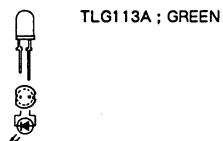
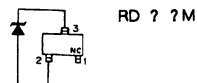
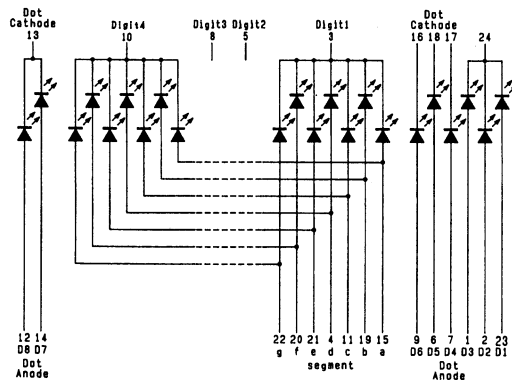
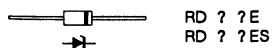
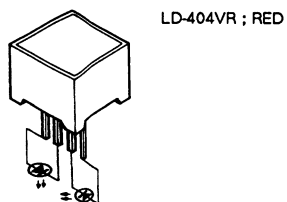
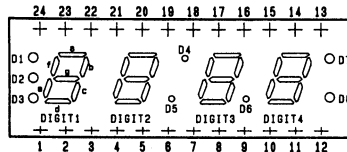
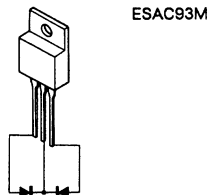
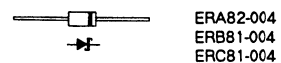
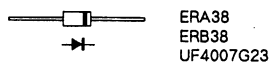
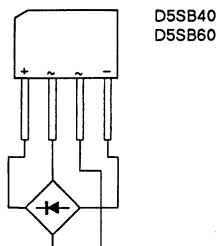
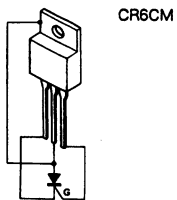
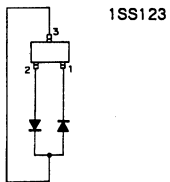
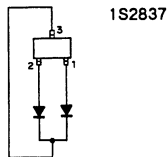
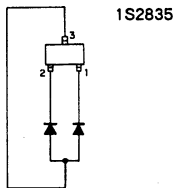
SECTION B

SEMICONDUCTOR

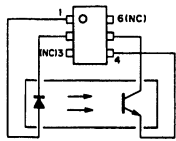
The circuit diagram of IC is obtained from the IC data book published by the manufacture.

	TYPE	PAGE		TYPE	PAGE
DIODE	1S2835	B-2	IC	CX20060	B-4
	1S2837	B-2		HD6305Y0E88P	B-4
	1SS123	B-2		HD63PB05Y0	B-5
	1SS178	B-2		M51995P	B-6
	CR6CM	B-2		M6M80011AFP	B-6
	D5SB40	B-2		MC14050BF	B-6
	D5SB60	B-2		MC14051BF	B-6
	ERA38	B-2		MC14053BF	B-6
	ERA82-004	B-2		MC14070BF	B-7
	ERA91	B-2		MC14071BF	B-7
	ERB38	B-2		MC14528BF	B-7
	ERB81-004	B-2		MC14538BF	B-7
	ERC81-004	B-2		NJM431L	B-7
	ESAC93M	B-2		PQ05RF1	B-8
	LC-204ML	B-2		SN16913P	B-8
	LD-404VR	B-2		SN74HC04ANS	B-8
	RD7?E	B-2		TC4SU69F	B-8
	RD7?ES	B-2		TL062CPS	B-8
	RD7?M	B-2		TL064CNS	B-8
	TLG113A	B-2		TL082CPS	B-8
	TLG206	B-2		TMP82C79M-2	B-9
	UF4007G23	B-2		UPC311G2	B-10
	PS2501-1	B-3		UPC358C	B-10
	PC111	B-3		UPC79M05HF	B-10
	TLP621	B-3		UPD6142G-101	B-10
TRANSISTOR	2SA1226	B-3			
	2SA812	B-3			
	2SC1623	B-3			
	2SC1959	B-3			
	2SC2757	B-3			
	2SD1406	B-3			
	2SJ106	B-3			
	2SK1016	B-3			
	2SK1082	B-3			
	2SK1387	B-3			
	2SK303	B-3			
	2SK94	B-3			

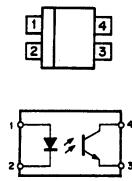
DIODE



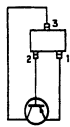
DIODE, TRANSISTOR



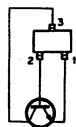
PC111



PS2501-1
TLP621



2SA1226
2SA812



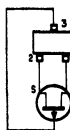
2SC1623
2SC2757



2SC1959



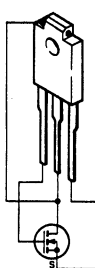
2SD1406



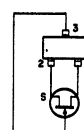
2SJ106



2SK1016
2SK1082

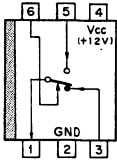


2SK1387



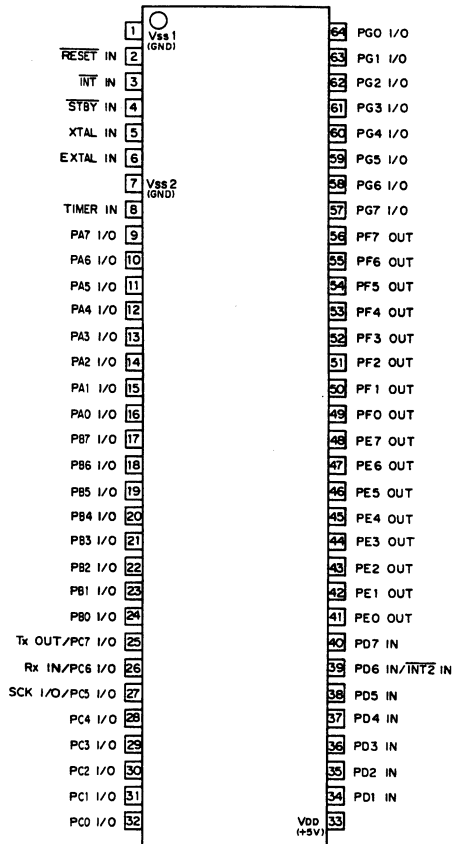
2SK303
2SK84

CX20060 (SONY)
ANALOG SWITCH
- TOP VIEW -



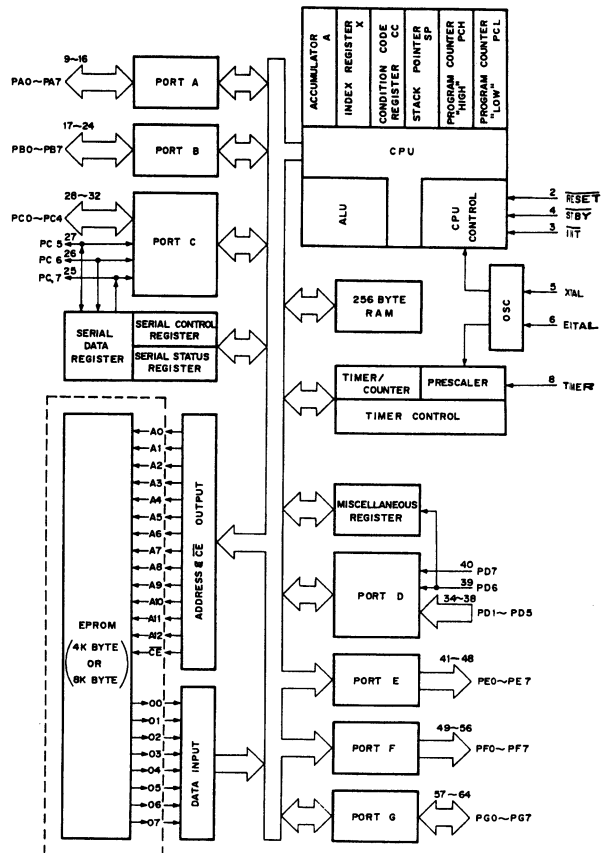
CONT.INPUT (PIN6)	SW
LOW OR OPEN	
HIGH	

HD6305Y0E88P (HITACHI) (INSTRUCTION CYCLE = 1 μ S ; f_{α} = 4MHz)
C-MOS 8-BIT MICROPROCESSOR UNIT
- TOP VIEW -



34 PD1	41 PEO
35 PD2	42 PE1
36 PD3	43 PE2
37 PD4	44 PE3
38 PD5	45 PE4
39 PD6/INT2	46 PE5
40 PD7	47 PE6
	48 PE7
2 RESET	49 PFO
4 STBY	50 PF1
3 INT	51 PF2
8 TIMER	52 PF3
	53 PF4
5 XTAL	54 PF5
6 EXTAL	55 PF6
	56 PF7
32 PC0	16 PA0
31 PC1	15 PA1
30 PC2	14 PA2
29 PC3	13 PA3
28 PC4	12 PA4
27 PC5/SCK	11 PA5
26 PC6/RX	10 PA6
25 PC7/TX	9 PA7
64 PG0	24 PB0
63 PG1	23 PB1
62 PG2	22 PB2
61 PG3	21 PB3
60 PG4	20 PB4
59 PG5	19 PB5
58 PG6	18 PB6
57 PG7	17 PB7

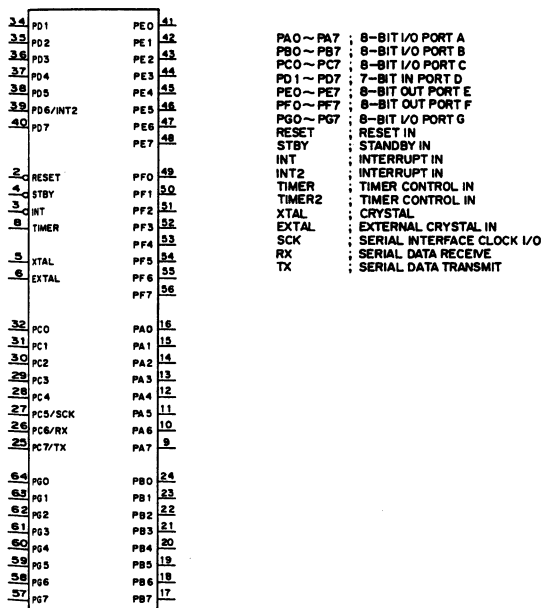
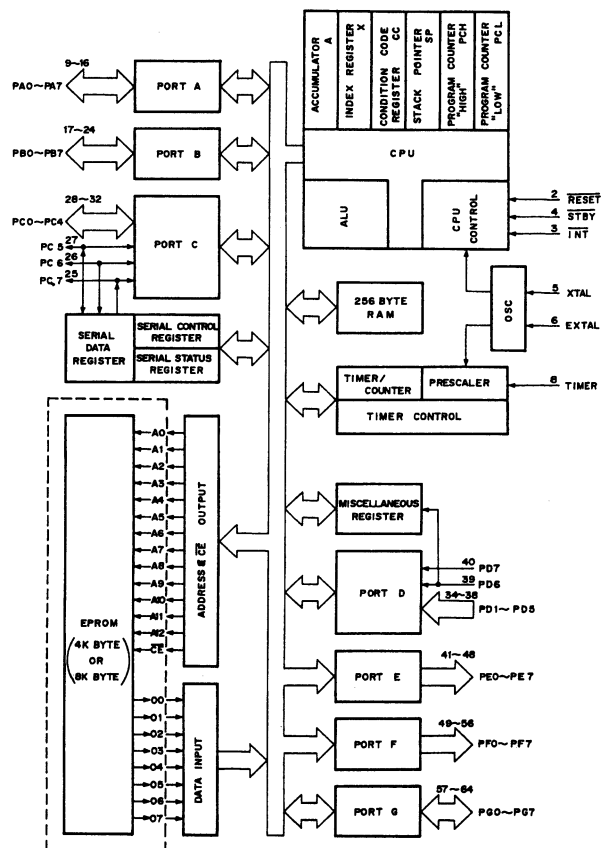
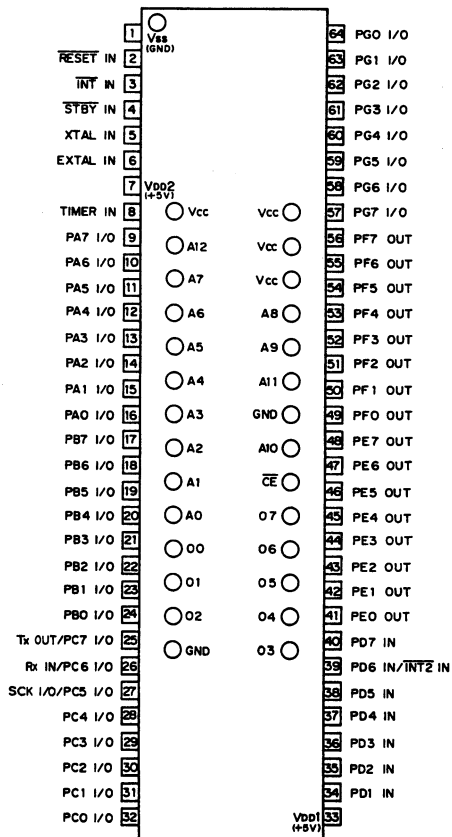
PA0 ~ PA7 : 8-BIT I/O PORT A
PB0 ~ PB7 : 8-BIT I/O PORT B
PC0 ~ PC7 : 8-BIT I/O PORT C
PD1 ~ PD7 : 7-BIT IN PORT D
PE0 ~ PE7 : 8-BIT OUT PORT E
PFO ~ PF7 : 8-BIT OUT PORT F
PG0 ~ PG7 : 8-BIT I/O PORT G
RESET : RESET IN
STBY : STANDBY IN
INT : INTERRUPT IN
INT2 : INTERRUPT IN
TIMER : TIMER CONTROL IN
TIMER2 : TIMER CONTROL IN
XTAL : CRYSTAL
EXTAL : EXTERNAL CRYSTAL IN
SCK : SERIAL INTERFACE CLOCK I/O
RX : SERIAL DATA RECEIVE
TX : SERIAL DATA TRANSMIT



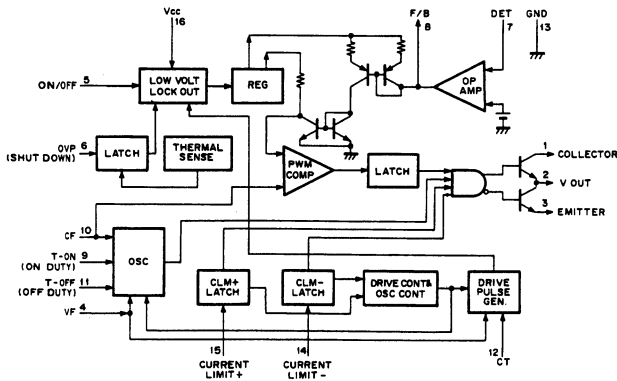
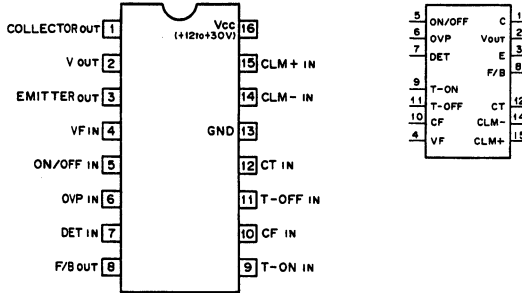
HD63PB05Y0 (HITACHI) (INSTRUCTION CYCLE = 0.5 μ s ; f_{α} = 8MHz)

C-MOS 8-BIT MICROCOMPUTER UNIT

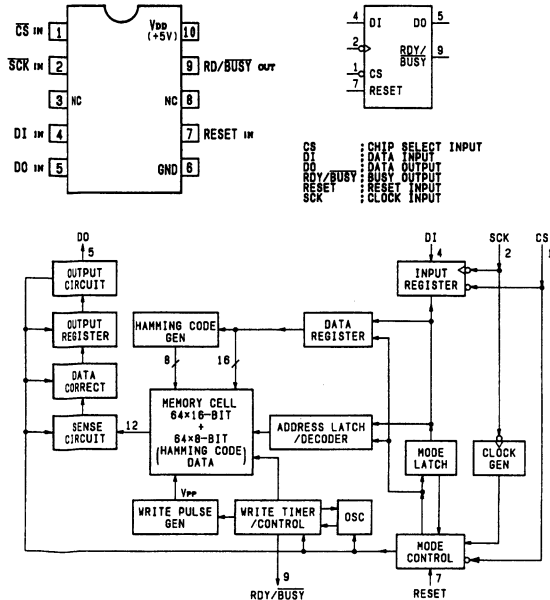
- TOP VIEW -



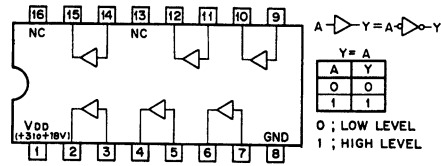
M51995P (MITSUBISHI)
SWITCHING REGULATOR CONTROL
- TOP VIEW -



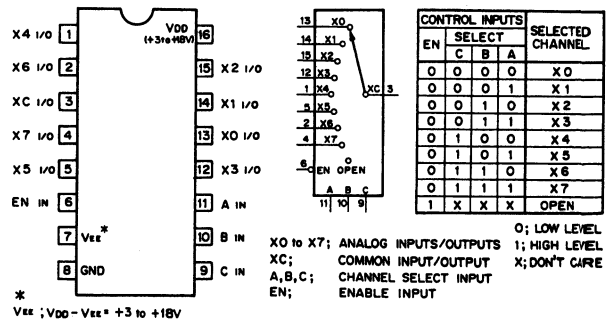
M6M80011AFP (MITSUBISHI) FLAT PACKAGE
C-MOS 1k (64x16) BIT ERASABLE PROM
- TOP VIEW -



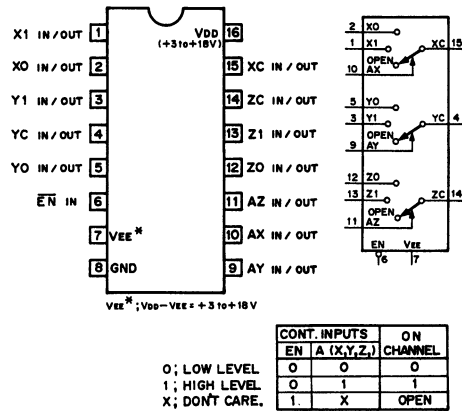
MC14050BF (MOTOROLA) FLAT PACKAGE
C-MOS NON-INVERTING TYPE BUFFER/CONVERTER
- TOP VIEW -



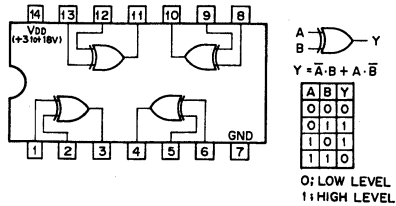
MC14051BF (MOTOROLA) FLAT PACKAGE
C-MOS 8-CHANNEL ANALOG MULTIPLEXER/DEMULPLEXER
- TOP VIEW -



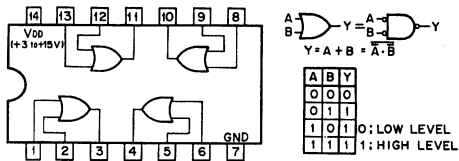
MC14053BF (MOTOROLA) FLAT PACKAGE
C-MOS TRIPLE 2-CHANNEL ANALOG MULTIPLEXERS/DEMULPLEXERS
- TOP VIEW -



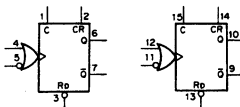
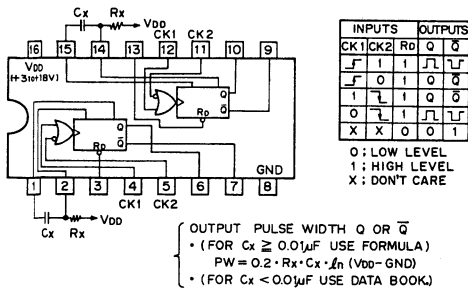
MC14070BF (MOTOROLA) FLAT PACKAGE
C-MOS QUAD EXCLUSIVE OR GATES
- TOP VIEW -



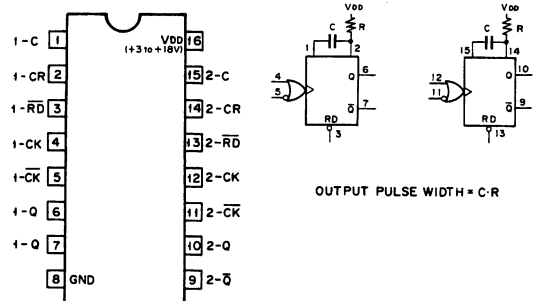
MC14071BF (MOTOROLA) FLAT PACKAGE
C-MOS 2-INPUT OR GATE
- TOP VIEW -



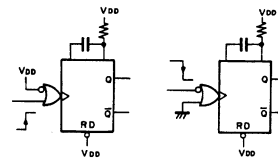
MC14528BF (MOTOROLA) FLAT PACKAGE
C-MOS RETRIGGERABLE/RESETTABLE MMV
- TOP VIEW -



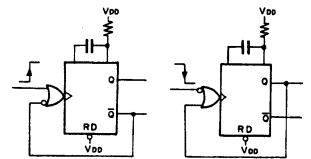
MC14538BF (MOTOROLA) FLAT PACKAGE
C-MOS DUAL RETRIGGERABLE MONOSTABLE MULTIVIBRATORS
- TOP VIEW -



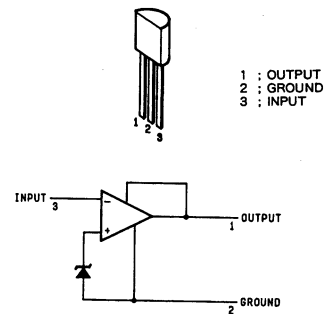
RETRIGGERABLE M.M.V



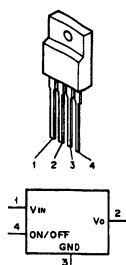
NON-RETRIGGERABLE M.M.V



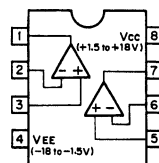
NJM431L (JRC)
ADJUSTABLE PRECISION SHUNT REGULATOR



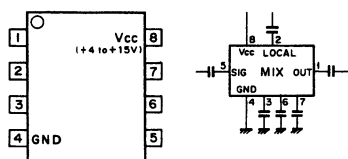
PQ05RF1 (SHARP) + 5V
POSITIVE VOLTAGE REGULATOR (1A)



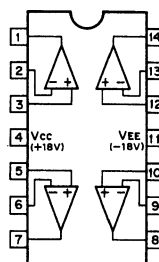
TL062CPS (TI) FLAT PACKAGE
TL082CPS (TI) FLAT PACKAGE
OPERATIONAL AMPLIFIER
(JFET INPUT)
- TOP VIEW -



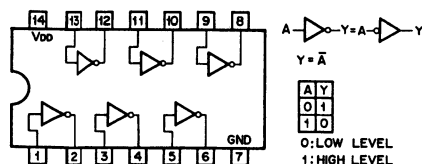
SN16913P (TI)
BALANCED MIXER
- TOP VIEW -



TL064CNS (TI) FLAT PACKAGE
OPERATIONAL AMPLIFIER
(J FET-INPUT)
- TOP VIEW -



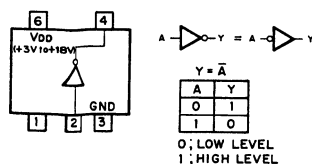
SN74HC04ANS (TI) FLAT PACKAGE
C-MOS HEX INVERTERS
- TOP VIEW -



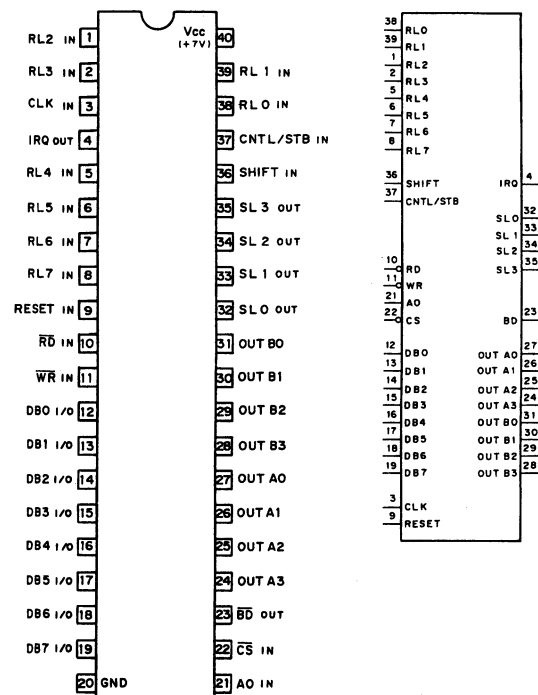
NOTE :

TYPE	V _{DD}
74HC04 TYPE	+5V
TC74AC04 TYPE	+2 to +5.5V
74ACT04 TYPE	+4.5 to +5.5V
OTHER TYPES	+2 to +6V

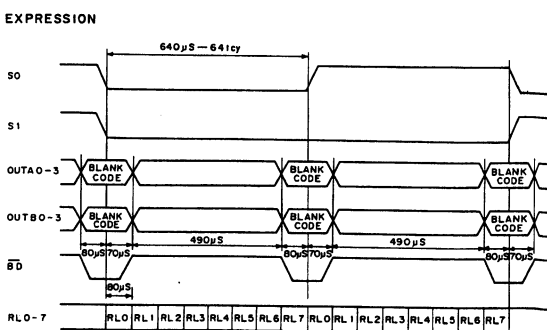
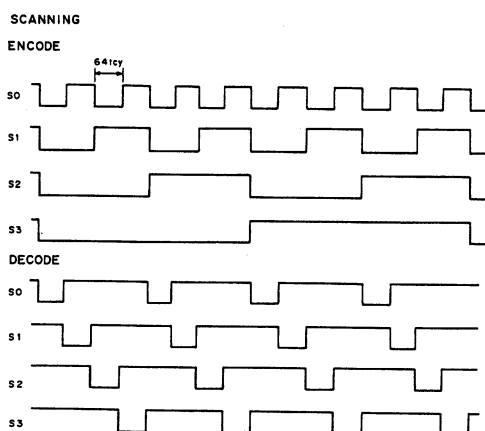
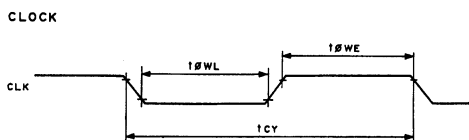
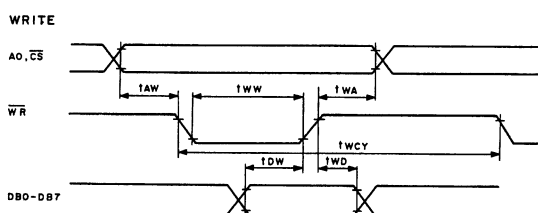
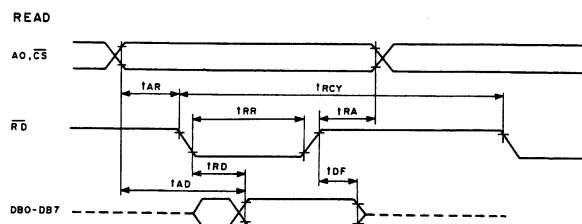
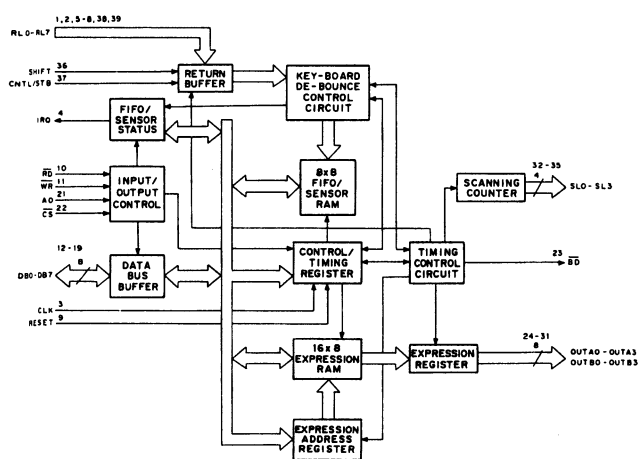
TC4SU69F (TOSHIBA) FLAT PACKAGE
C-MOS INVERTER BUFFER
- TOP VIEW -



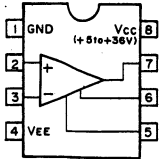
TMP82C79M-2 (TOSHIBA) FLAT PACKAGE

C-MOS PROGRAMABLE KEY-BOARD/DISPLAY INTERFACE DEVICE
- TOP VIEW -

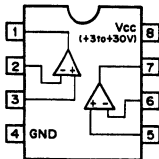
AO ; COMMAND/DATA CONTROL INPUT
BD ; DISPLAY BLANKING OUTPUT
CLK ; CLOCK INPUT
CNTL/STB ; CONTROL/STROBE INPUT
CS ; CHIP SELECT INPUT
DB0-DB7 ; DATA BUS INPUT/OUTPUT
IRQ ; INTERRUPT REQUEST OUTPUT
OUT A0-A3 ; 16x4 BIT EXPRESSION REFRESH REGISTER
OUT B0-B3 ;
RD ; READ STROBE INPUT
RESET ; RESET INPUT
RL0-RL7 ; RETURN LINE INPUT
SHIFT ; SHIFT INPUT
SLO-SL3 ; SCANNING LINE OUTPUT
WR ; WRITE STROBE INPUT



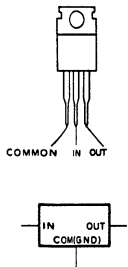
UPC311G2 (NEC) FLAT PACKAGE
VOLTAGE COMPARATOR
- TOP VIEW -



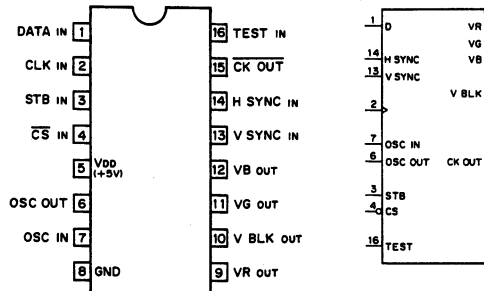
UPC358C (NEC)
DUAL OPERATIONAL AMPLIFIERS
- TOP VIEW -



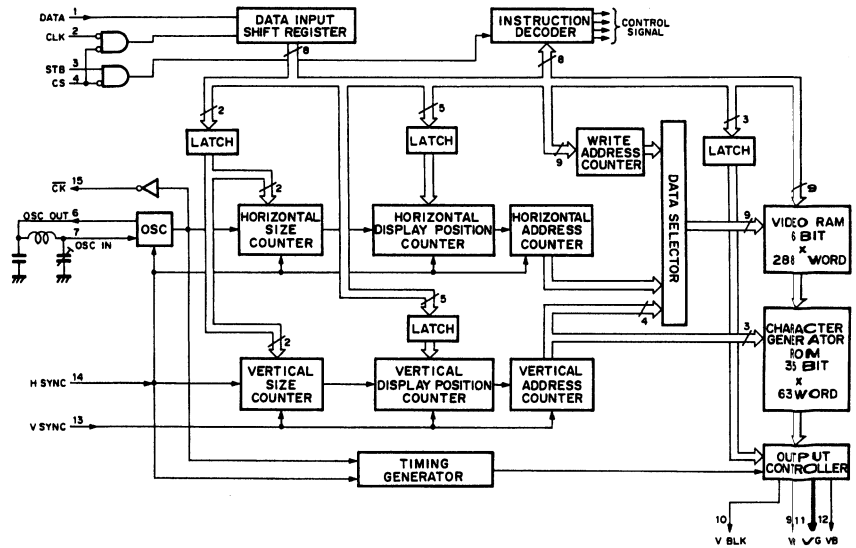
UPC79M05HF (NEC) -5V
NEGATIVE VOLTAGE REGULATOR (0.5A)
- SIDE VIEW -



UPD6142G-101 (NEC) FLAT PACKAGE
C-MOS 8-BIT SERIAL INPUT CHARACTER DISPLAY
- TOP VIEW -

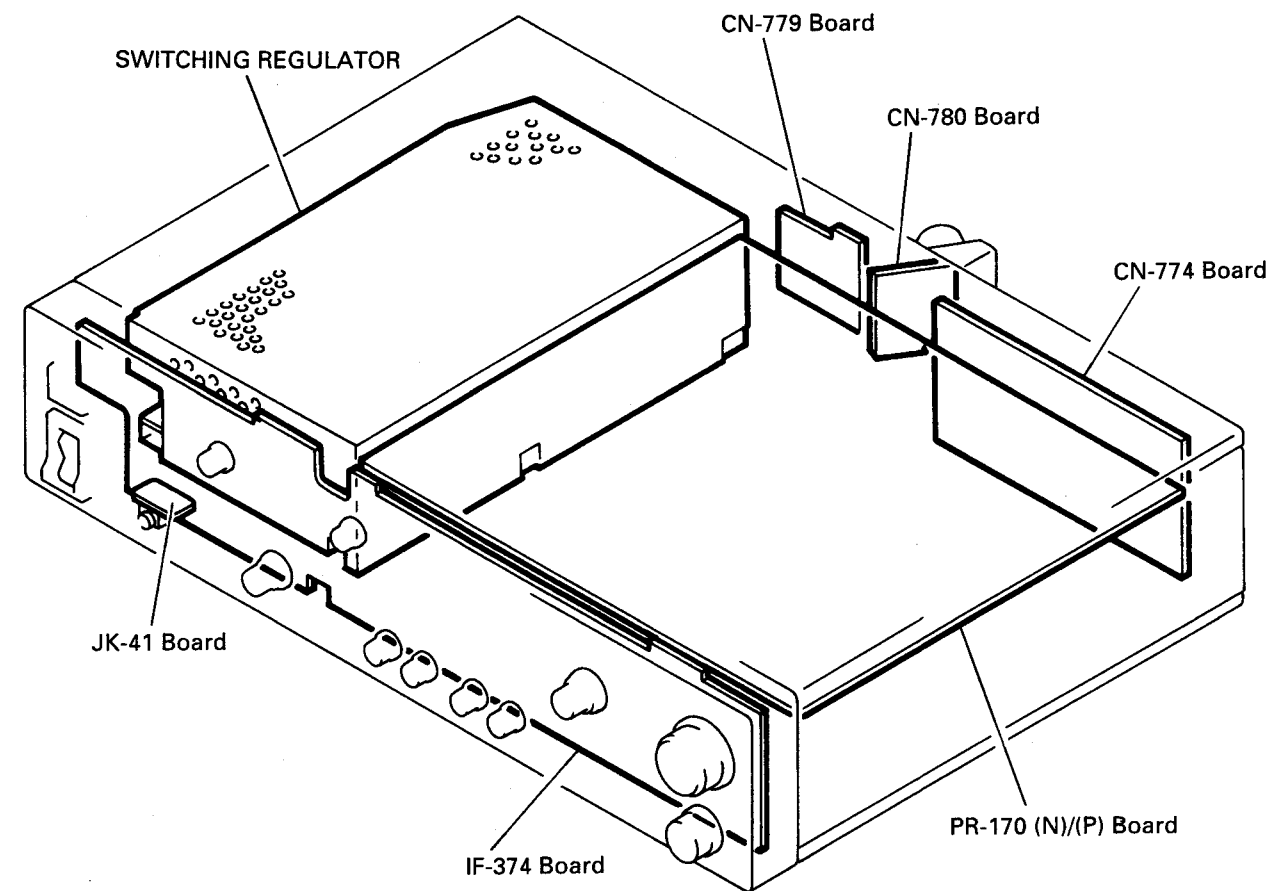


D; DATA INPUT
CK OUT; EQUAL TO OUTPUT OF OSC OUT
CLK; CLOCK INPUT
CS; CHIP SELECT INPUT
H SYNC; H SYNC INPUT
OSC IN, OUT; EXTERNAL TERMINAL FOR OSC
STB; STROBE INPUT
TEST; TEST CLOCK INPUT
VB; BLUE CHARACTER DATA OUTPUT
V BLK; V BLANKING OUTPUT
VG; GREEN CHARACTER DATA OUTPUT
VR; RED CHARACTER DATA OUTPUT
V SYNC; V SYNC INPUT



SECTION C

SCHEMATIC DIAGRAMS AND BOARD ILLUSTRATIONS



PR-170(N)/(P) BOARD

PR-170(N)/(P)(1-645-220-11)

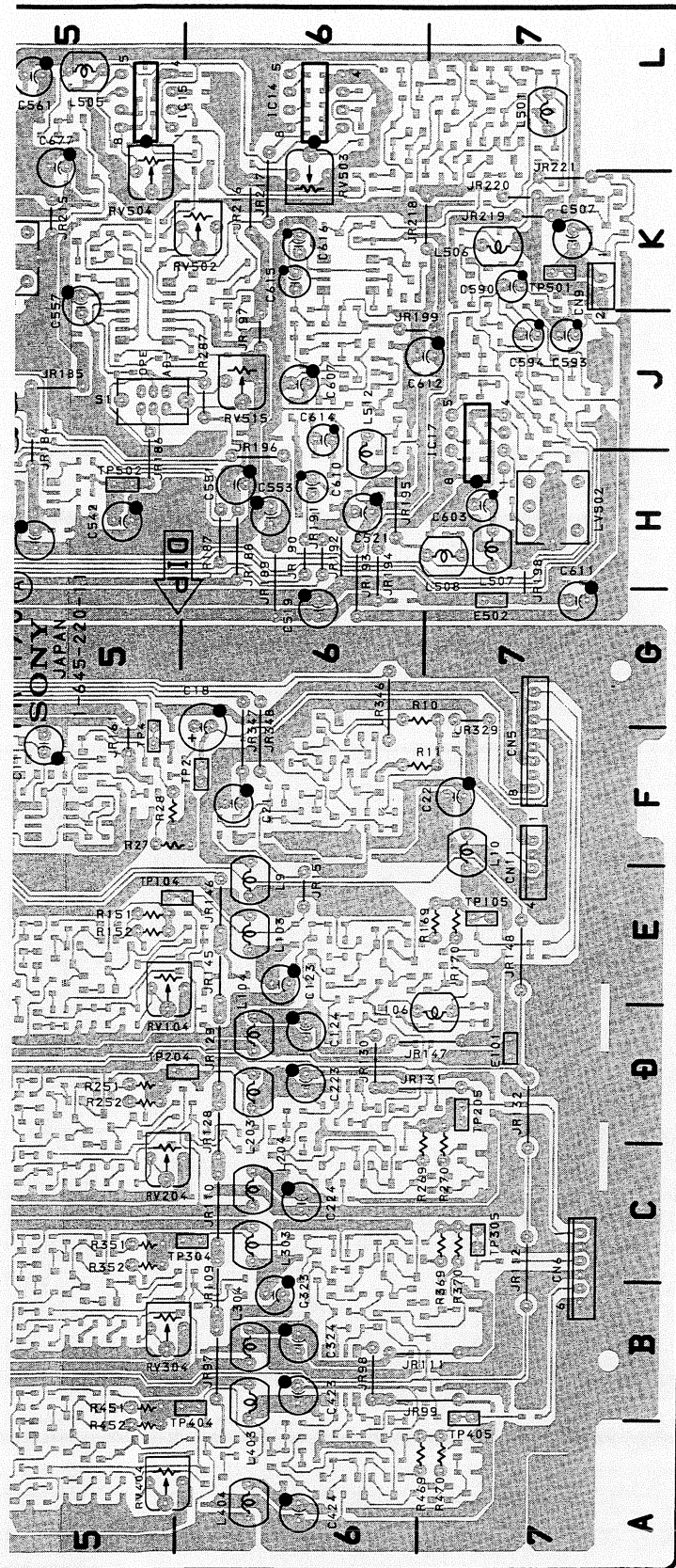
CN1	H-1	*Q1	F-2	*Q207	D-2	*Q333	B-6	*Q525	K-5	RV401	A-2
CN2	G-1	*Q2	E-2	*Q208	D-2	*Q334	B-7	*Q526	K-6	RV402	A-3
CN4	C-1	*Q3	F-4	*Q209	D-2	*Q335	C-7	*Q527	L-7	RV403	A-4
CN5	F-7	*Q4	F-5	*Q210	C-2	*Q336	B-7	*Q528	L-7	RV404	A-5
CN6	C-7	*Q5	F-5	*Q211	D-3	*Q337	B-3	*Q529	L-7	RV501	L-3
CN7	L-1	*Q6	F-5	*Q212	D-3	*Q338	B-6	*Q530	L-7	RV502	K-6
CN9	K-7	*Q7	F-5	*Q213	D-4	*Q401	A-2	*Q531	L-7	RV503	K-6
CN10	J-1	*Q8	F-5	*Q214	D-4	*Q402	A-2	*Q532	L-6	RV504	K-5
CN11	E-7	*Q9	F-6	*Q215	D-4	*Q403	B-2	*Q533	L-7	RV505	L-3
		*Q10	F-6	*Q216	C-4	*Q404	A-2	*Q534	L-5	RV506	L-3
*D1	F-2	*Q11	F-6	*Q217	D-4	*Q405	A-2	*Q535	L-3	RV507	H-3
*D4	F-4	*Q12	F-6	*Q218	D-4	*Q406	B-2	*Q536	L-3	RV508	J-3
*D5	F-5	*Q13	F-6	*Q219	C-3	*Q407	B-2	*Q546	K-7	RV509	H-4
*D6	F-5	*Q14	G-6	*Q220	C-4	*Q408	A-2	*Q547	J-7	RV510	J-4
*D103	E-2	*Q15	F-6	*Q221	D-5	*Q409	B-2	*Q548	J-7	RV511	J-3
*D107	D-2	*Q16	F-3	*Q222	D-5	*Q410	A-2	*Q549	J-7	RV512	J-4
*D201	C-1	*Q17	E-3	*Q223	D-5	*Q411	A-3	*Q550	J-7	RV516	H-3
*D203	D-2	*Q18	F-3	*Q224	C-5	*Q412	B-3	*Q551	J-7	RV517	K-2
*D207	C-2	*Q19	F-3	*Q225	D-5	*Q413	A-4	*Q552	J-6		
*D301	B-1	*Q20	F-3	*Q226	D-5	*Q414	A-4	*Q553	J-6		
*D303	B-2	*Q101	E-2	*Q227	D-5	*Q415	A-4	*Q554	J-6		
*D307	B-2	*Q102	D-2	*Q228	C-5	*Q416	A-4	*Q555	J-6		
*D401	A-1	*Q103	E-2	*Q229	D-5	*Q417	B-4	*Q556	J-6		
*D403	A-2	*Q104	D-2	*Q230	C-6	*Q418	A-4	*Q557	K-6		
*D407	A-2	*Q105	E-2	*Q231	C-6	*Q419	A-3	*Q558	J-2		
*D501	L-5	*Q106	E-2	*Q232	C-6	*Q420	A-4	*Q559	J-2		
*D502	J-4	*Q107	E-2	*Q233	C-6	*Q421	B-5	*Q560	J-2		
*D503	K-6	*Q108	E-2	*Q234	C-7	*Q422	B-5	*Q561	J-2		
*D504	J-7	*Q109	E-2	*Q235	C-6	*Q423	A-5	*Q562	J-2		
*D505	J-6	*Q110	D-2	*Q236	C-7	*Q424	A-5	*Q563	H-2		
*D506	K-6	*Q111	E-3	*Q237	D-3	*Q425	A-5	*Q564	H-2		
*D508	J-2	*Q112	E-3	*Q238	D-6	*Q426	A-5	*Q565	H-2		
*D509	H-3	*Q113	E-4	*Q301	B-2	*Q427	A-5	*Q566	G-3		
*D510	G-3	*Q114	E-4	*Q302	B-2	*Q428	A-5	*Q567	L-2		
*D511	G-4	*Q115	E-4	*Q303	C-2	*Q429	A-6	*Q568	L-2		
*D512	J-4	*Q116	E-4	*Q304	B-2	*Q430	A-6	*Q569	L-2		
		*Q117	E-4	*Q305	B-2	*Q431	A-6	*Q570	L-2		
E101	D-7	*Q118	E-4	*Q306	C-2	*Q432	A-6	*Q571	L-2		
E501	K-2	*Q119	D-3	*Q307	C-2	*Q433	A-7	*Q572	L-2		
E502	G-7	*Q120	E-4	*Q308	B-2	*Q434	A-7	*Q573	L-2		
		*Q121	E-5	*Q309	C-2	*Q435	A-6	*Q574	K-3		
FL1	L-5	*Q122	E-5	*Q310	B-2	*Q436	A-7	*Q575	K-2		
		*Q123	E-5	*Q311	C-3	*Q437	B-3	*Q576	L-2		
*IC2	F-4	*Q124	E-5	*Q312	C-3	*Q501	K-7	*Q577	L-2		
*IC3	F-4	*Q125	E-5	*Q313	C-4	*Q502	K-7	*Q578	L-1		
*IC4	F-5	*Q126	E-5	*Q314	C-4	*Q503	L-5	*Q579	L-1		
*IC5	D-3	*Q127	E-5	*Q315	B-4	*Q504	L-4	*Q580	L-1		
*IC6	B-3	*Q128	D-5	*Q316	B-4	*Q505	L-4	*Q581	L-1		
*IC7	D-6	*Q129	E-5	*Q317	C-4	*Q506	L-4	*Q582	L-1		
*IC8	B-6	*Q130	E-6	*Q318	B-4	*Q507	L-4	*Q584	L-1		
IC11	J-4	*Q131	E-6	*Q319	B-3	*Q508	L-5	*Q585	L-2		
*IC12	H-5	*Q132	E-6	*Q320	B-4	*Q509	L-4				
*IC13	K-5	*Q133	E-6	*Q321	C-5	*Q510	L-4	RV101	E-1		
IC14	L-6	*Q134	E-7	*Q322	B-5	*Q511	L-4	RV102	E-3		
IC15	L-5	*Q135	E-6	*Q323	C-5	*Q512	L-4	RV103	D-4		
IC16	L-3	*Q136	E-7	*Q324	B-5	*Q513	K-4	RV104	D-5		
IC17	J-7	*Q137	D-3	*Q325	B-5	*Q514	K-4	RV201	D-2		
*IC18	K-6	*Q138	D-6	*Q326	C-5	*Q515	K-4	RV202	C-3		
*IC19	J-3	*Q201	C-2	*Q327	B-5	*Q516	J-4	RV203	C-4		
*IC20	H-2	*Q202	C-2	*Q328	B-5	*Q517	H-4	RV204	C-5		
*IC21	H-3	*Q203	D-2	*Q329	B-5	*Q518	H-5	RV301	B-2		
*IC22	G-4	*Q204	C-2	*Q330	C-6	*Q519	H-4	RV302	B-3		
*IC23	J-3	*Q205	C-2	*Q331	B-6	*Q520	H-4	RV303	B-4		
*IC24	K-1	*Q206	D-2	*Q332	C-6	*Q524	K-5	RV304	B-5		

*:SOLDERING SIDE

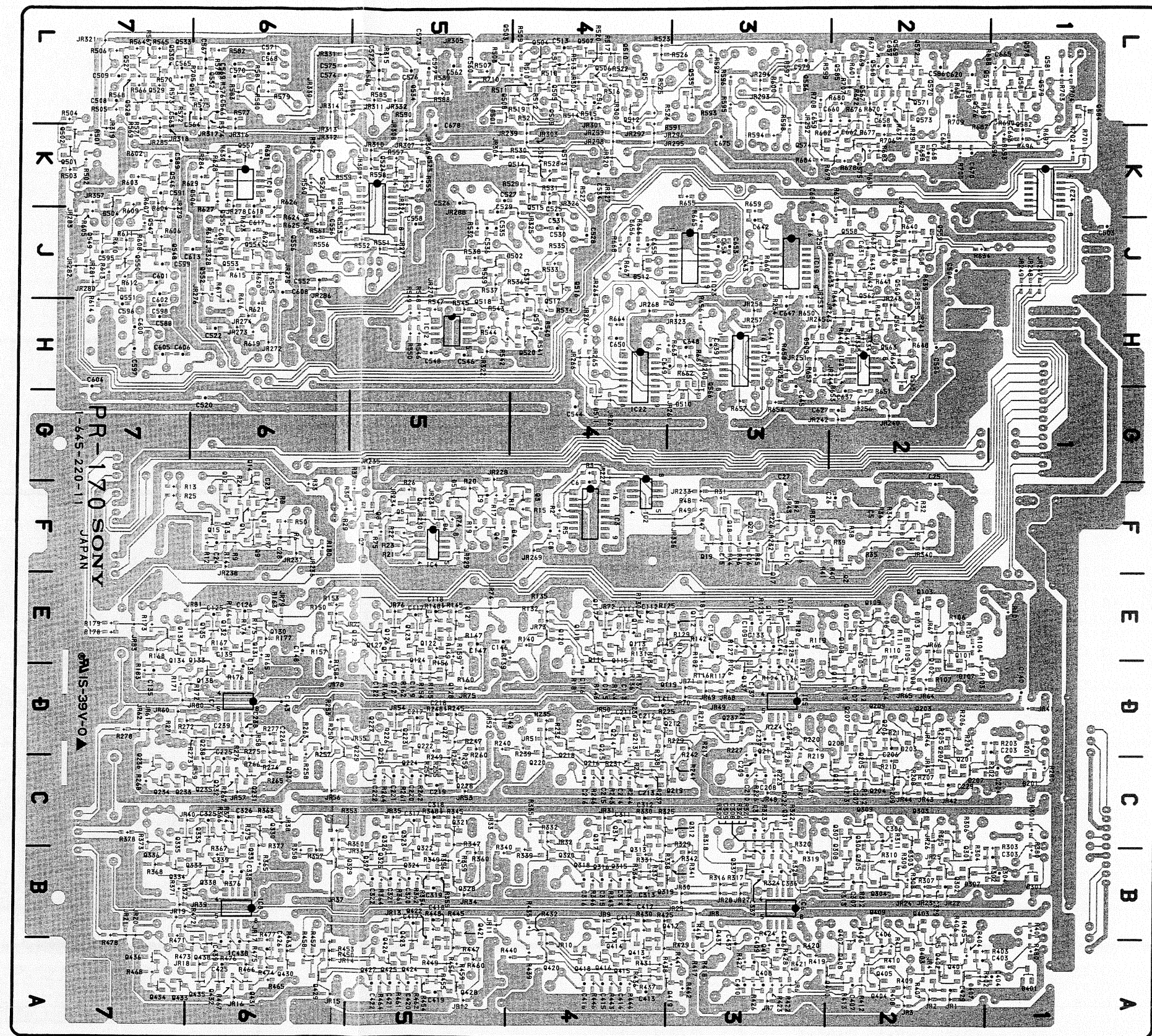
C-2



C-2



PR-170(N)/(P) -COMPONENT SIDE-
1-645-220-11
CCU-M5 (J,UC)
CCU-M5P(EK)



PR-170(N)/(P) -SOLDER SIDE-
1-645-220-11
CCU-M5 (J,UC)
CCU-M5P(EK)

PR-170(N)/(P)回路図(1/2)

注意:

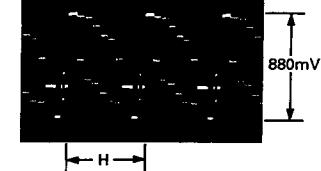
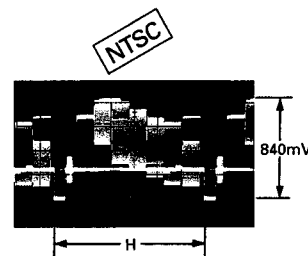
- DC電圧はデジタル電圧計(入力インピーダンス 10MΩ)による値。
- 波形写真及びDC電圧は下記条件で測定。
 - CCU-M5 / M5P を CCZ ケーブル (25m ; CCZ-A25) でカメラ DXC-537 / 537P + CA-537/537Pと接続する。
 - CCU-M5/M5Pのスイッチ・セッティング
 - MODEスイッチ: BARS
 - CABLE COMPE FINE Yねじ: メカニカル センター
 - CABLE COMPE FINE Cねじ: メカニカル センター
 - CABLE COMP スイッチ: 25m
 - 映像信号切り換えスイッチ: Y, R-Y, B-Y

PR-170 (N)/(P) BOARD (1/2)

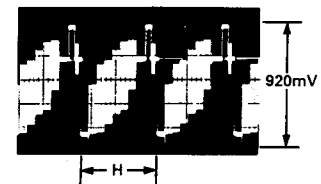
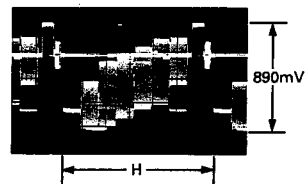
NOTE:

- All voltage are dc, measured with a digital voltmeter. (input impedance: 10MΩ)
- All waveforms are taken and DC voltage is measured in condition below.
 - Be sure that CCU-M5/M5P is connected to DXC-537/ 537P + CA-537/537P by the camera cable (25m: CCZ-A25).
 - Set the switches on CCU.
 - MODE selector : BARS
 - CABLE COMPE FINE Y screw : Mechanical center
 - CABLE COMPE FINE C screw : Mechanical center
 - CABLE COMPE selector : 25m
 - Video output selector : Y, R-Y, B-Y

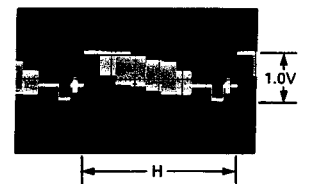
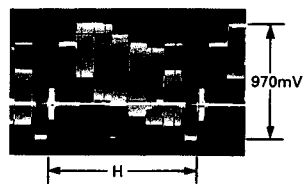
TP101 VBS VIDEO IN



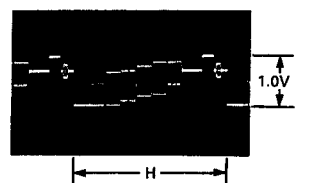
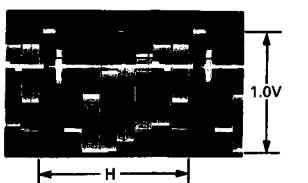
TP102 VBS VIDEO



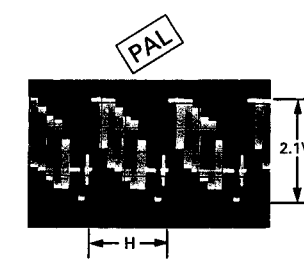
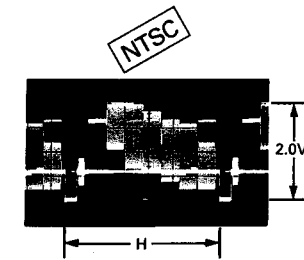
TP103 VBS VIDEO



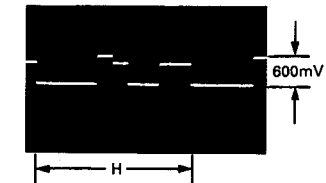
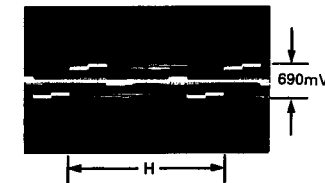
TP104 VBS VIDEO



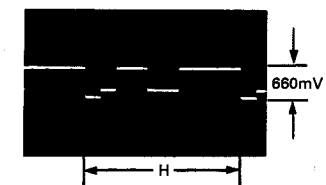
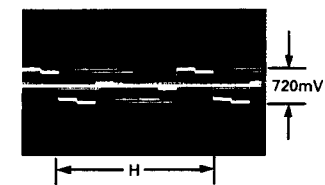
TP105 VBS VIDEO OUT



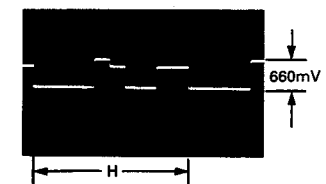
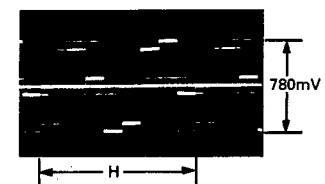
TP201 R-Y VIDEO



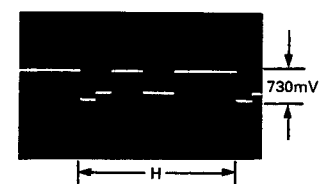
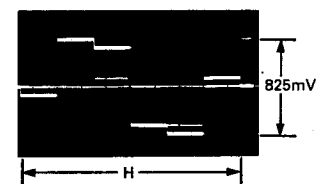
TP202 R-Y VIDEO



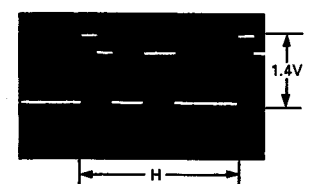
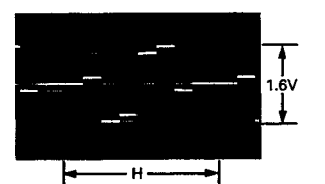
TP203 R-Y VIDEO



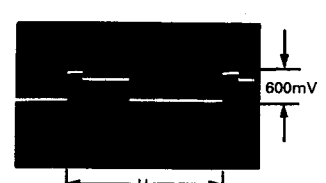
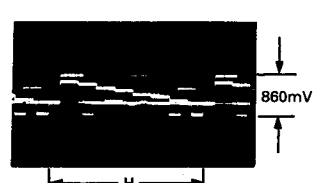
TP204 R-Y VIDEO



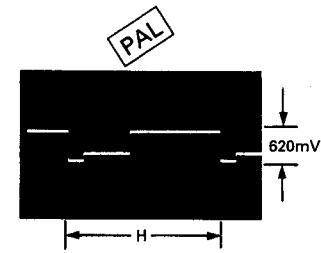
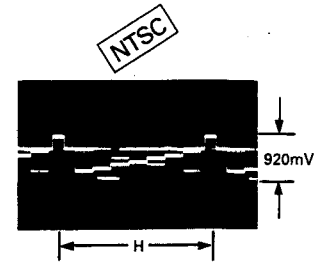
TP205 R-Y VIDEO



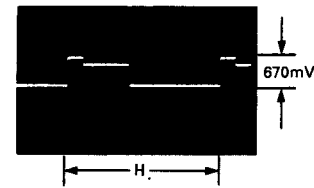
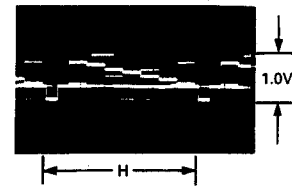
TP301 Y VIDEO



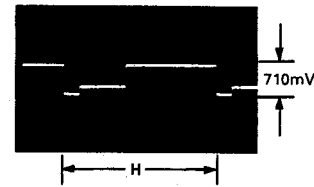
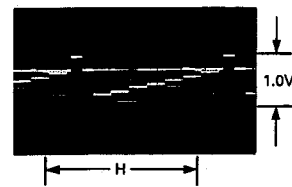
TP302 Y VIDEO



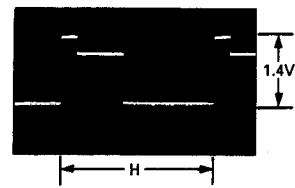
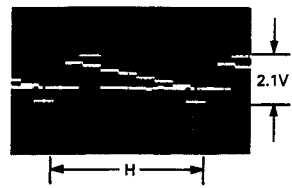
TP303 Y VIDEO



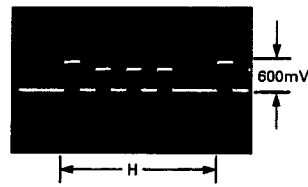
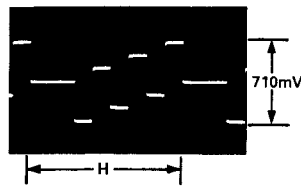
TP304 Y VIDEO



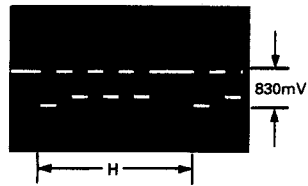
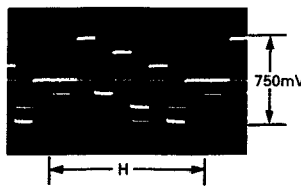
TP305 Y VIDEO



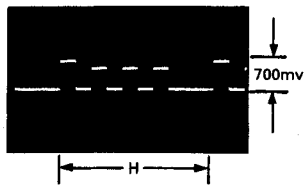
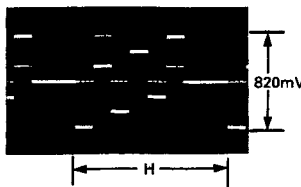
TP401 B-Y VIDEO



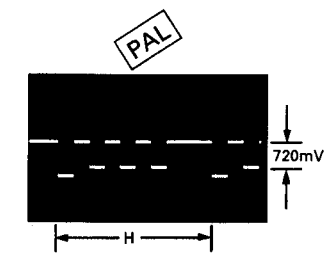
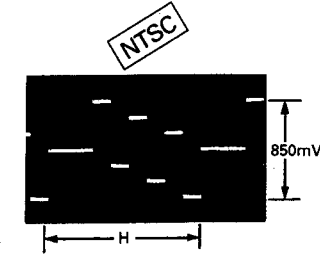
TP402 B-Y VIDEO



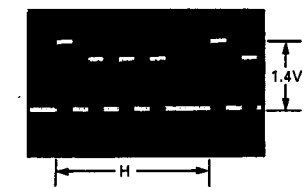
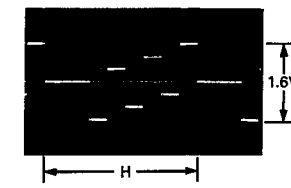
TP403 B-Y VIDEO



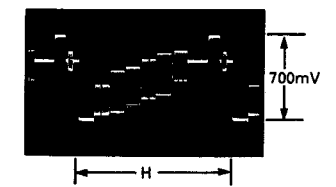
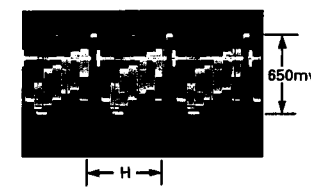
TP404 B-Y VIDEO



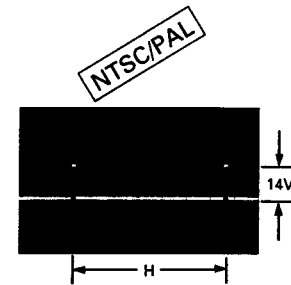
TP405 B-Y VIDEO



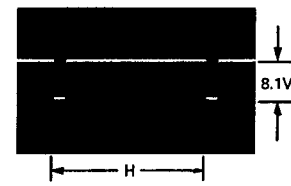
CN2-10pin CHARACTER



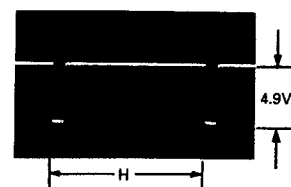
TP1 SAMPLE PULSE



TP2 SYNC

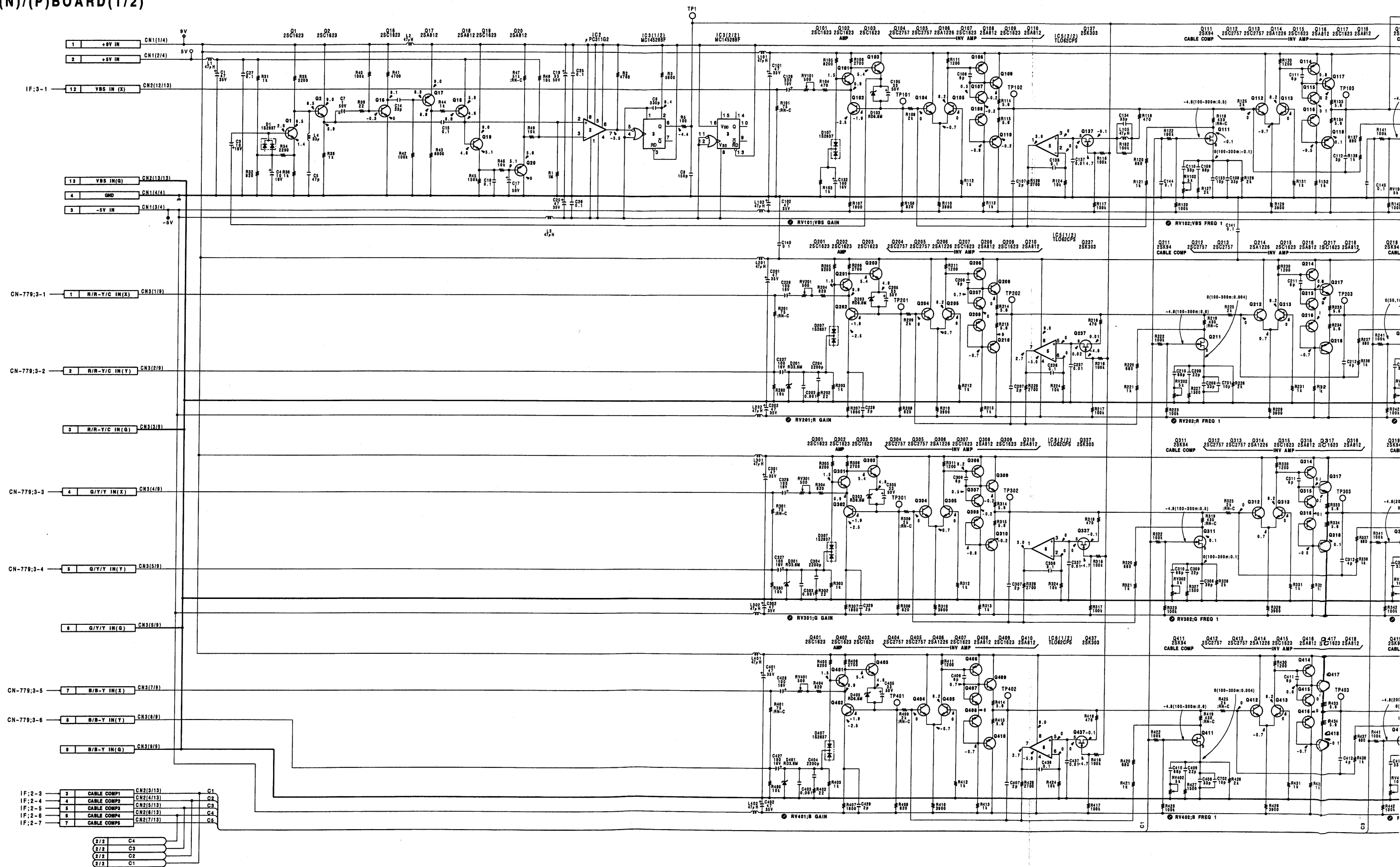


TP4 SYNC



PR-170(N)/(P)BOARD(1/2) PR-170(N)/(P)BOARD(1/2)

PR-170(N)/(P)BOARD(1/2)

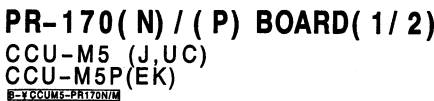


CCU-M5 (J,UC)
CCU-M5P(EK)

C-5

C-5

PR-170(N)/(P)BOARD(1/2)



PR-170(N)/(P)回路図(2/2)

注意:

- DC電圧はデジタル電圧計(入力インピーダンス 10MΩ)による値。
- 波形写真及びDC電圧は下記条件で測定。
 - CCU-M5 / M5P を CCZ ケーブル (25m ; CCZ-A25) で カメラ DXC-537 / 537P + CA-537/537P と接続する。
 - CCU-M5/M5Pのスイッチ・セッティング
 MODEスイッチ: BARS
 CABLE COMPE FINE Yねじ: メカニカル センター
 CABLE COMPE FINE Cねじ: メカニカル センター
 CABLE COMP スイッチ: 25m
 映像信号切り換えスイッチ: Y, R-Y, B-Y
 RETURN VIDEO 75Ωスイッチ: ON
 GENLOCK 75Ωスイッチ: ON
 - CCU-M5/M5PリアパネルのRETURN VIDEO IN端子及びGENLOCK IN端子にカラーバー信号 (1Vp-p 75Ω終端時)を入力する。

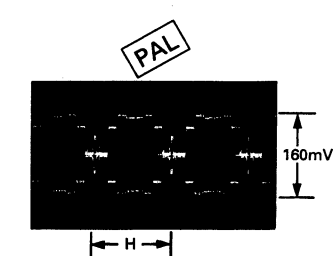
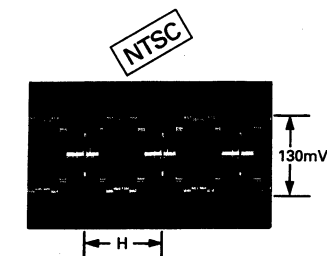
PR-170 (N)/(P) BOARD (2/2)

NOTE:

- All voltage are dc, measured with a digital voltmeter. (input impedance: 10MΩ)
- All waveforms are taken and DC voltage is measured in condition below.
 - Be sure that CCU-M5/M5P is connected to DXC-537/ 537P + CA-537/537P by the camera cable (25m: CCZ-A25).
 - Set the switches on CCU.

MODE selector	: BARS
CABLE COMPE FINE Y screw	: Mechanical center
CABLE COMPE FINE C screw	: Mechanical center
CABLE COMPE selector	: 25m
Video output selector	: Y, R-Y, B-Y
RETURN VIDEO 75Ω switch	: ON
GENLOCK 75Ω switch	: ON
 - Connectors "GENLOCK IN" and "RETURN VIDEO IN" are supplied with the color bar signal (1Vp-p).

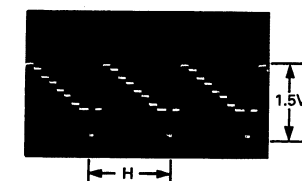
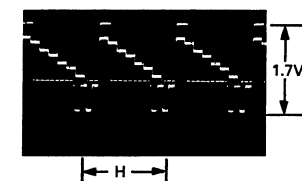
TP504 RETURN VIDEO



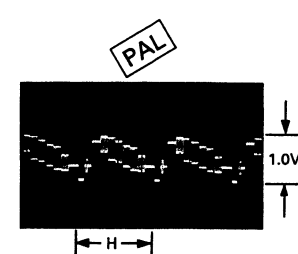
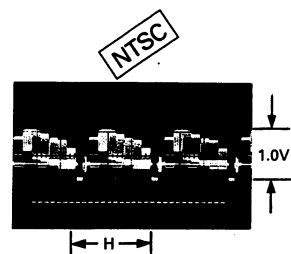
TP505 GENLOCK BURST GATE



Q503 Emitter Y



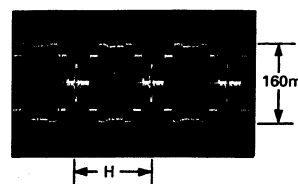
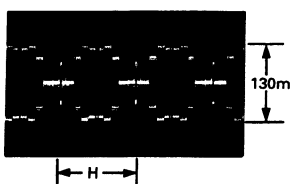
TP501 RETURN VIDEO



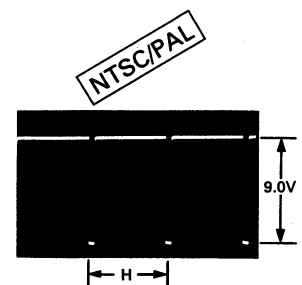
TP502



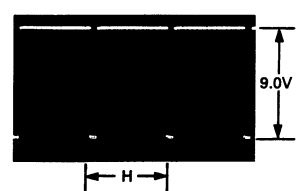
TP503 RETURN VIDEO



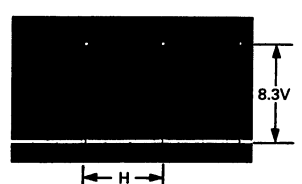
TP506 SYNC



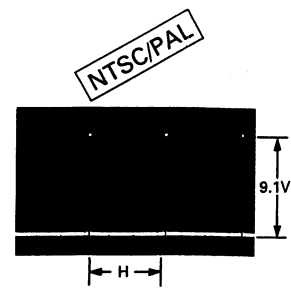
TP507 CLAMP



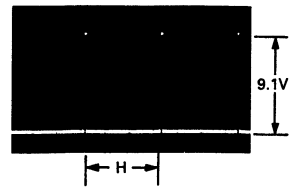
TP508 CLAMP PULSE WIDTH



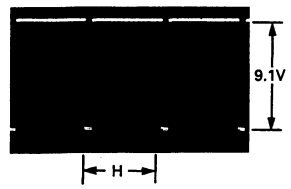
TP509
BURST GATE PULSE



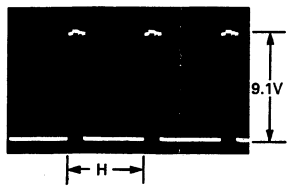
TP510 PULSE WIDTH



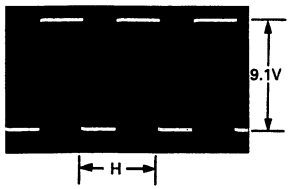
TP511
ADVANCED SYNC



TP512 SYNC WIDTH

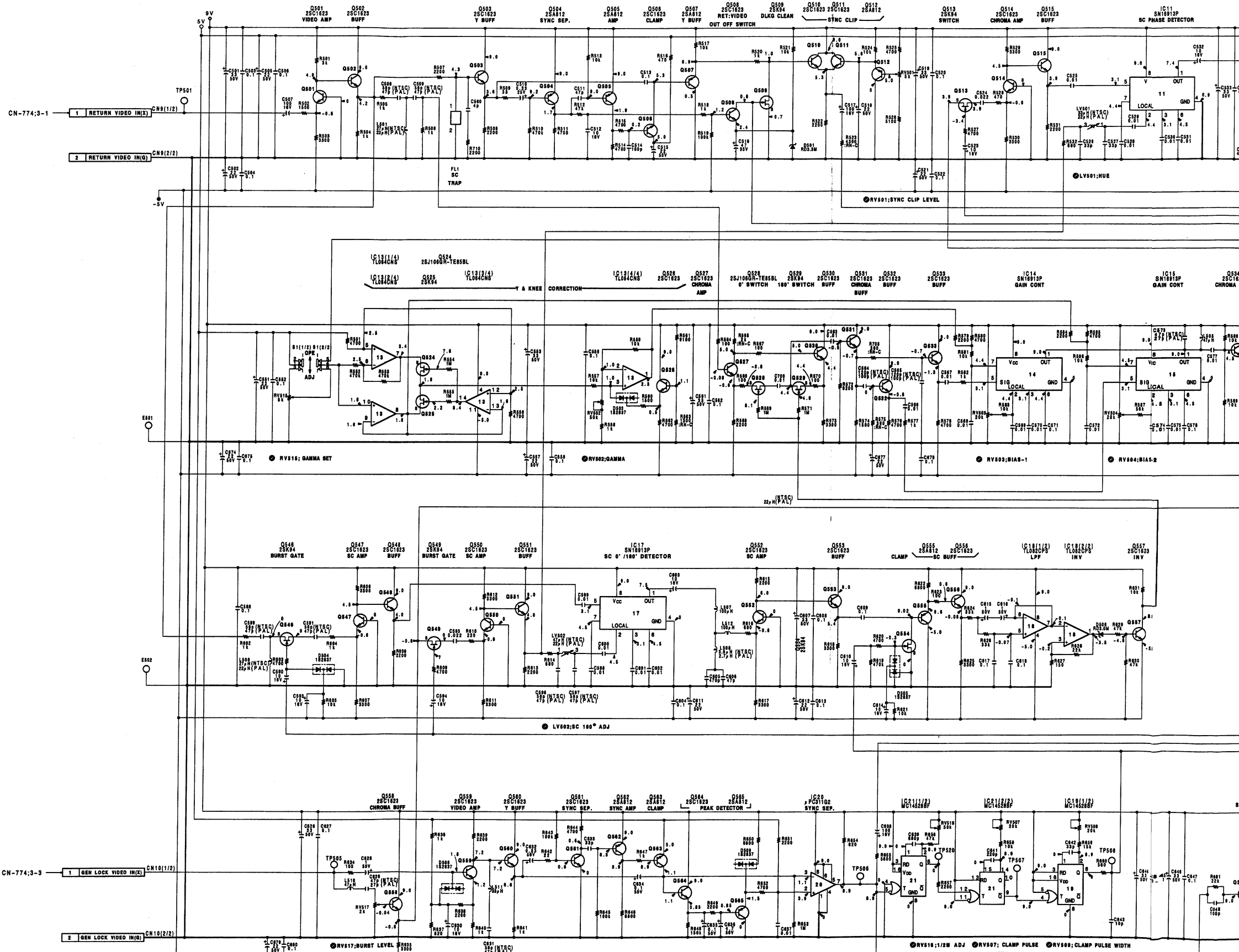


TP520



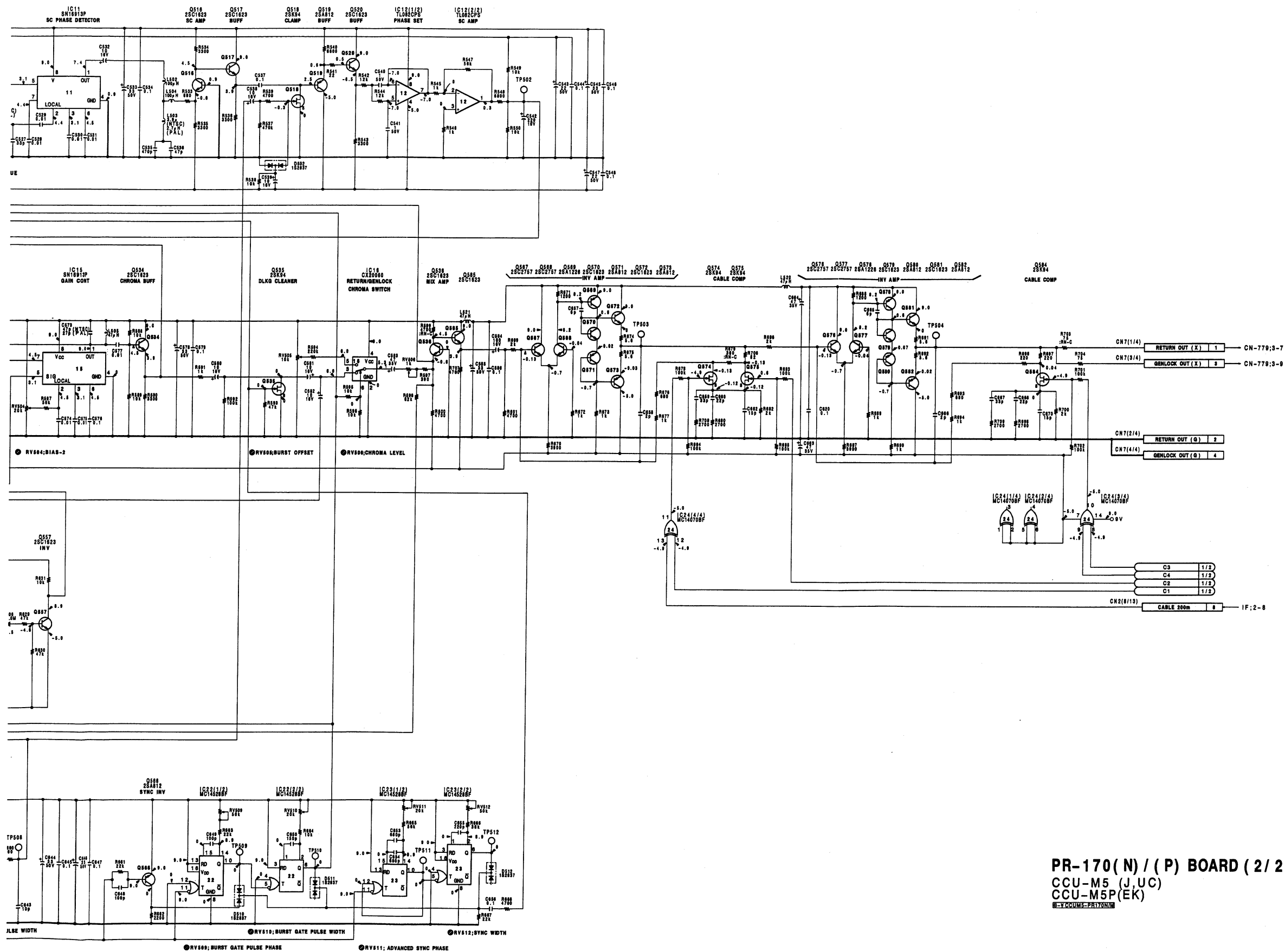
PR-170(N)/(P)BOARD(2/2)

PR-170(N)/(P)BOARD(2/2)

CCU-M5 (J,UC)
CCU-M5P(EK)

C-7

C-7

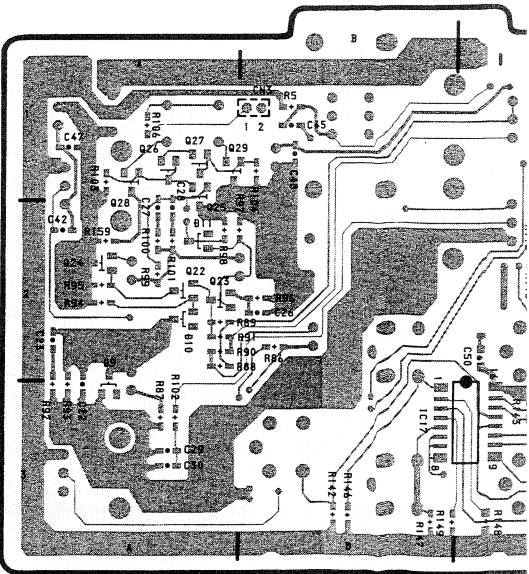
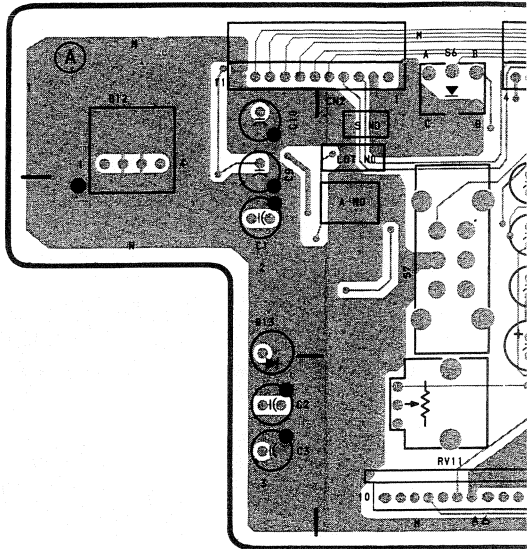


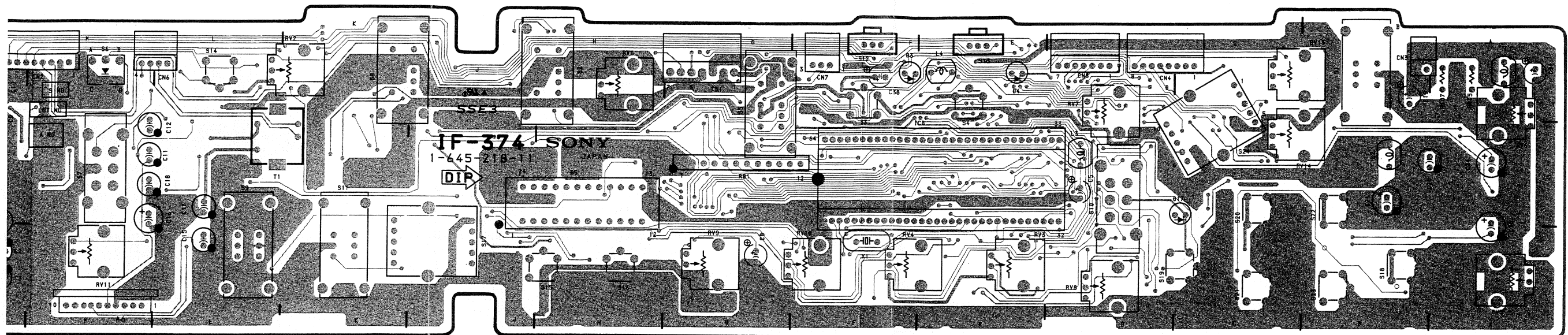
PR-170(N)/(P)BOARD(2/2)
CCU-M5(J,UC)
CCU-M5P(EK)
B-EXCUMS-PR170NM

IF-374 BOARD

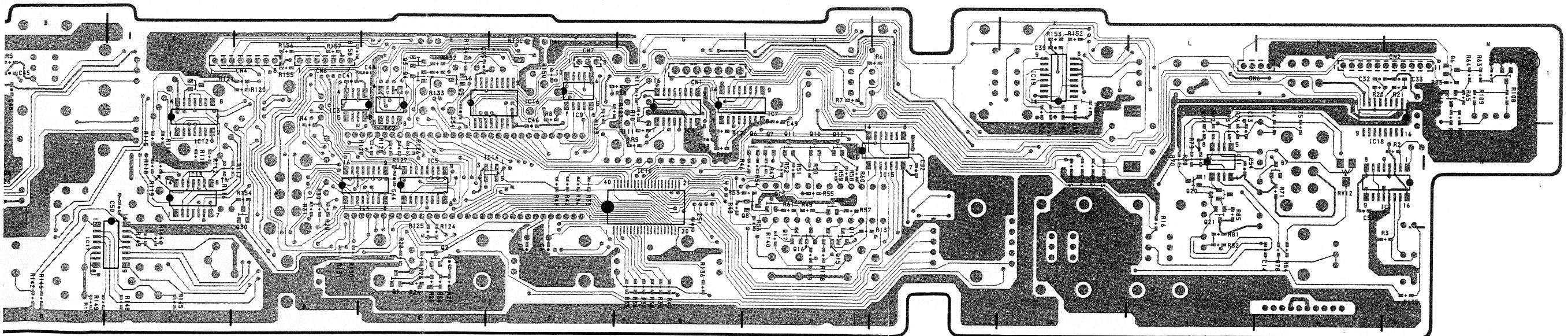
IF-374(1-645-218-11)

CN1	G-1	*Q24	A-2
CN2	M-1	*Q25	A-2
CN3	B-1	*Q26	A-1
CN4	D-1	*Q27	A-1
CN6	L-1	*Q28	A-2
CN7	F-1	*Q29	A-1
CN8	D-1	*Q30	D-3
D3	F-1	RV1	H-1
D4	E-1	RV2	K-1
D5	H-2	RV3	E-3
*D6	N-1	RV4	F-3
*D7	M-2	RV5	A-3
*D8	L-2	RV6	A-2
*D9	A-2	RV7	D-1
*D10	A-2	RV8	D-3
*D11	A-2	RV9	G-3
D12	N-1	RV10	F-3
*D14	C-1	RV11	M-3
D17	C-2	*RV12	M-2
		RV13	B-1
		RV14	B-2
*IC1	N-2	S1	B-1
*IC2	E-2	S2	H-1
*IC3	D-1	S3	F-1
*IC4	E-2	S4	E-1
*IC5	E-2	S5	G-1
*IC6	G-2	S6	M-1
*IC7	H-1	S7	M-2
IC8	E-2	S8	K-1
*IC9	F-1	S9	L-2
*IC10	G-2	S10	D-2
*IC11	L-2	S11	K-2
*IC12	C-2	S12	F-1
*IC13	C-2	S13	E-1
*IC14	F-2	S14	L-1
*IC15	J-2	S15	H-3
*IC16	F-1	S16	H-3
*IC17	B-3	S17	J-3
*IC18	M-2	S18	B-3
*IC19	K-1	S19	D-3
		S20	C-2
*Q1	E-3	S21	C-3
*Q2	E-3	S22	B-2
*Q3	E-1	S23	B-3
*Q4	E-1	S24	C-2
*Q5	E-1		
*Q6	H-2		
*Q7	H-2		
*Q8	H-2	T1	L-2
*Q9	H-2		
*Q10	H-2	X1	F-3
*Q11	H-2		
*Q12	H-2		
*Q13	H-2		
*Q14	H-3		
*Q15	H-3		
*Q16	H-3		
*Q17	H-3		
*Q18	N-1		
*Q19	N-1		
*Q20	L-2		
*Q21	L-2		
*Q22	A-2		
*Q23	A-2		





IF-374 -COMPONENT SIDE-
1-645-218-11
CCU-M5 (J,UC)
CCU-M5P(EK)



IF-374 -SOLDER SIDE-
1-645-218-11
CCU-M5 (J,UC)
CCU-M5P(EK)

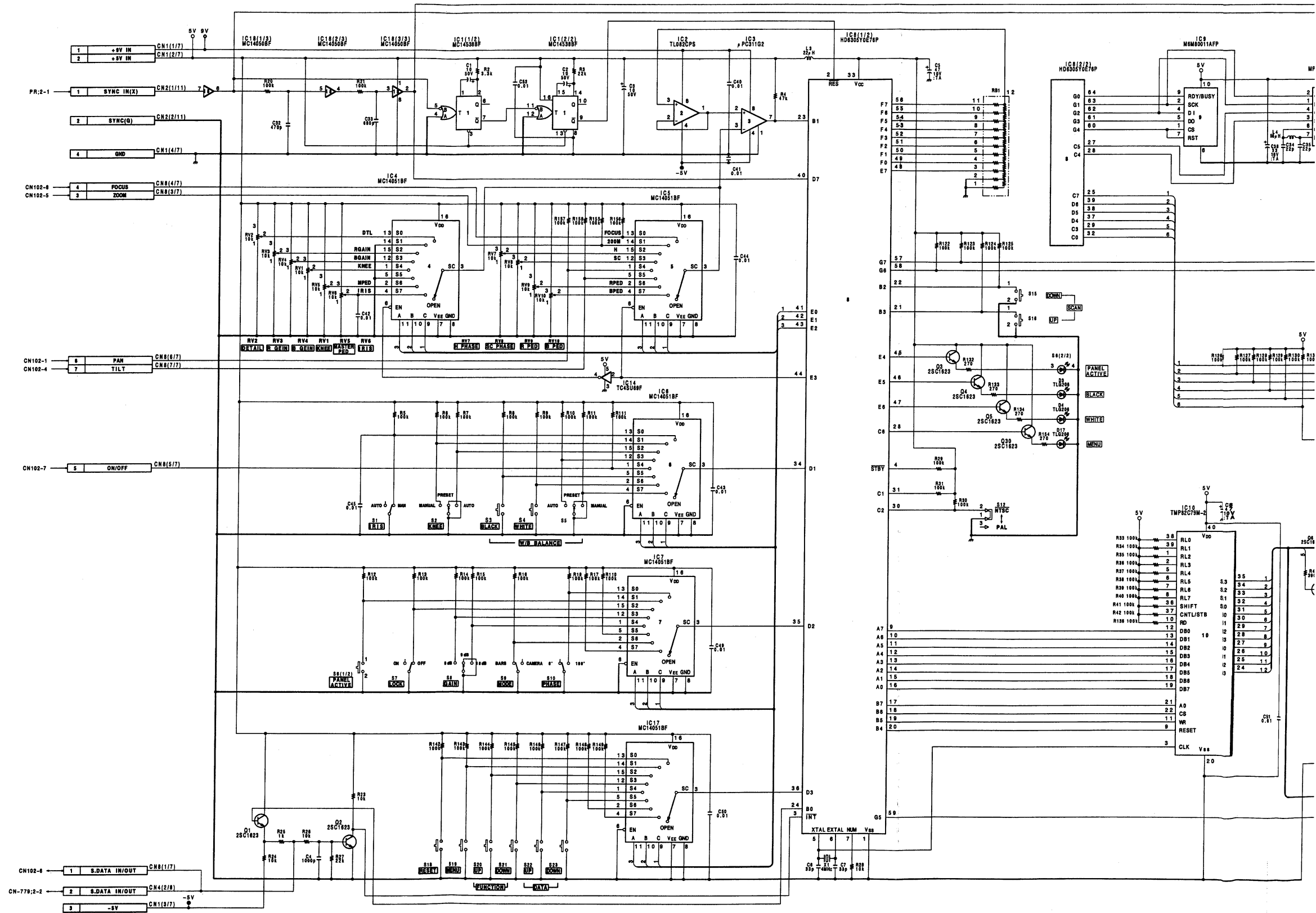
IF-374 BOARD

NOTE:
Ref No. IC8に使用されるICは、下記のSERIAL No.のみ、HD63PB05Y0 (PROM付き) がマウントされています。下記のSERIAL No. 以降はHD6305Y0E88Pに変更になります。HD63PB05Y0のサービス交換部品としては、HD6305Y0E88Pが供給されます。

SERIAL No. ~10220(UC)
~30060(J)
~40150(EK)

NOTE:
Units with following serial numbers have IC
HD6305Y0E88P in place of HD63PB05Y0 with
PROM mounted at IC8.
As a replacement semiconductor, HD6305Y0E88P
will be supplied.

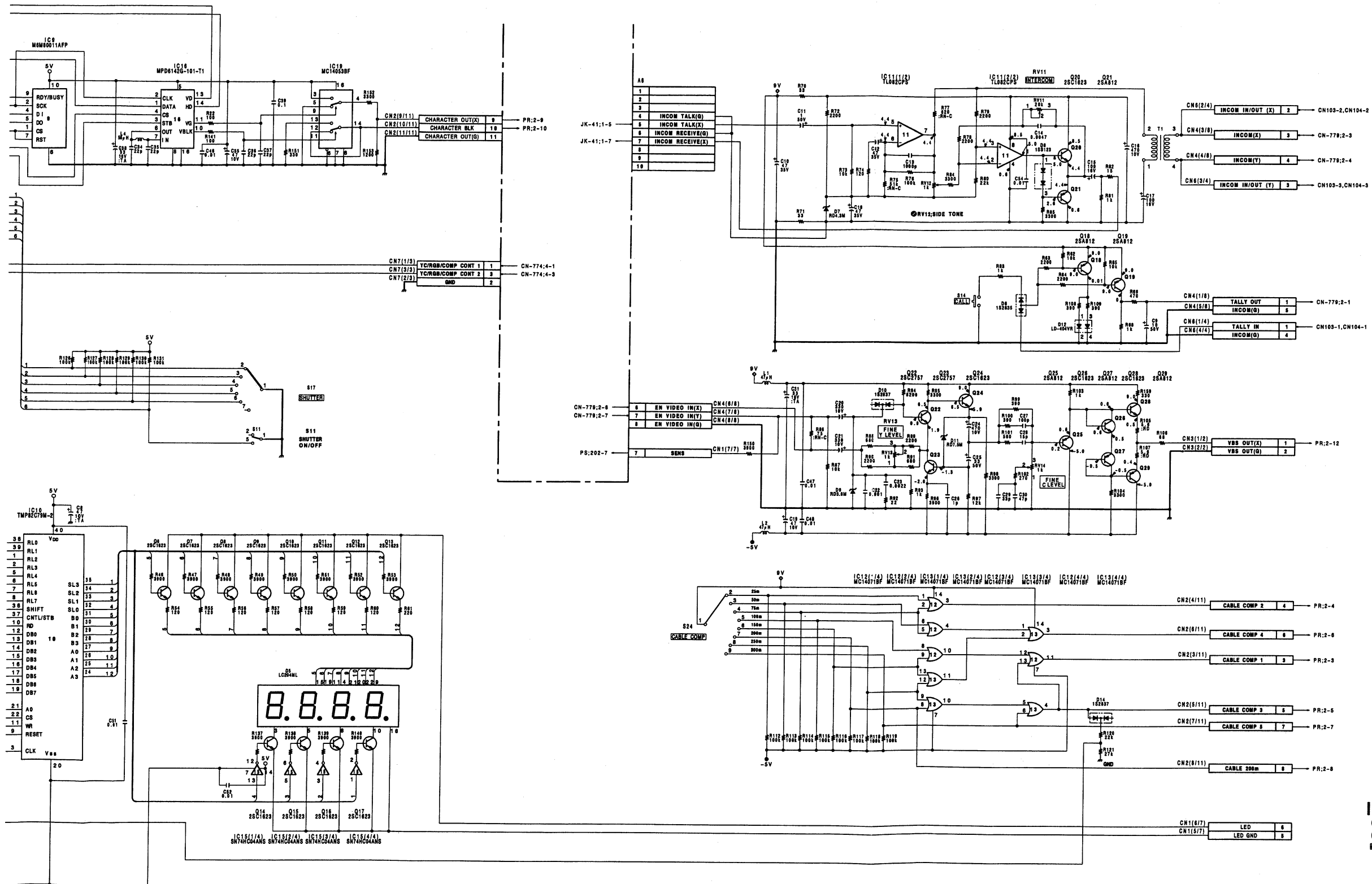
SERIAL No. 10221 and higher(UC)
30061 and higher(J)
40151 and higher(EK)



CCU-M5 (J,UC)
CCU-M5P(EK)

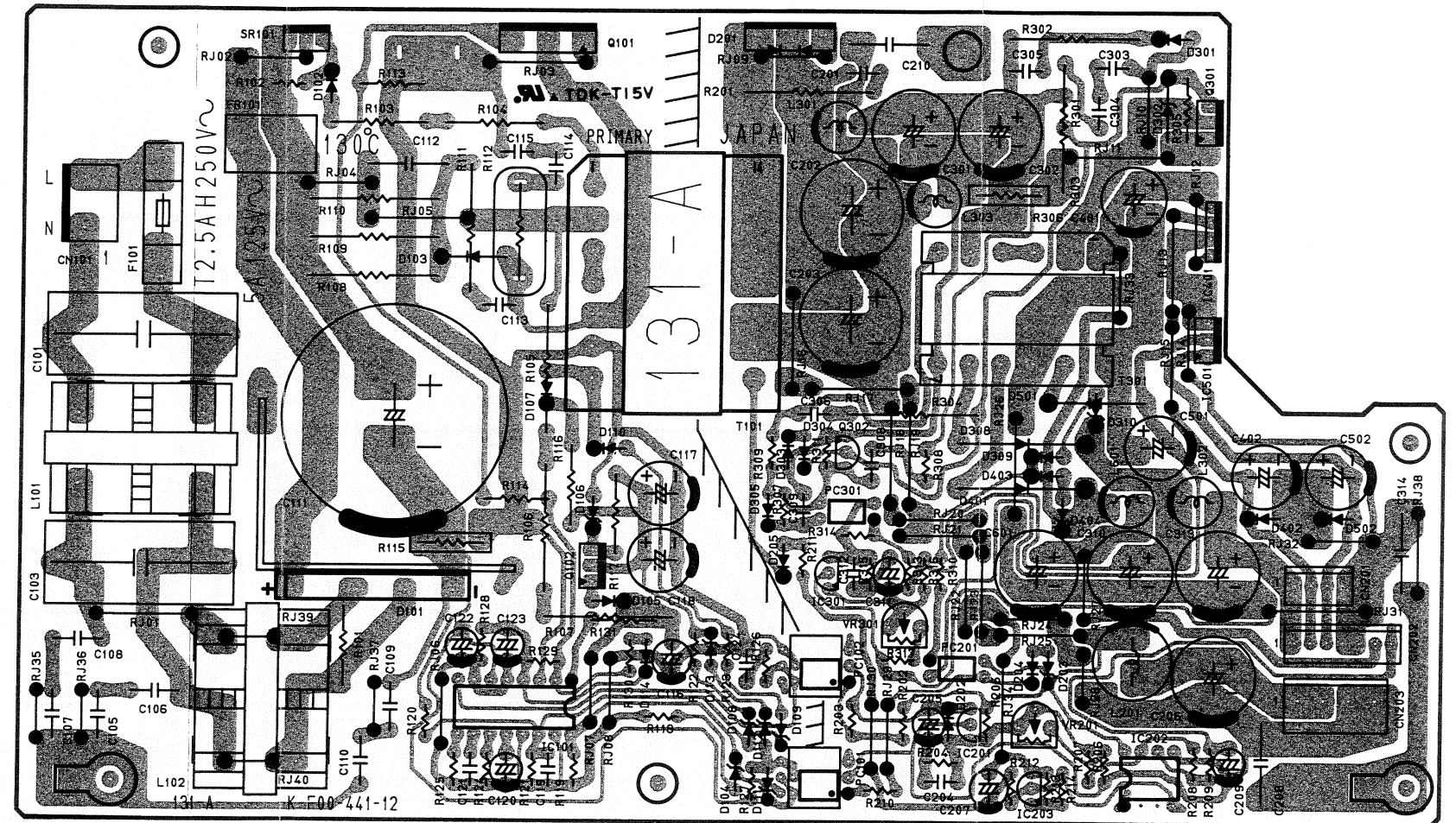
C-9

C-9

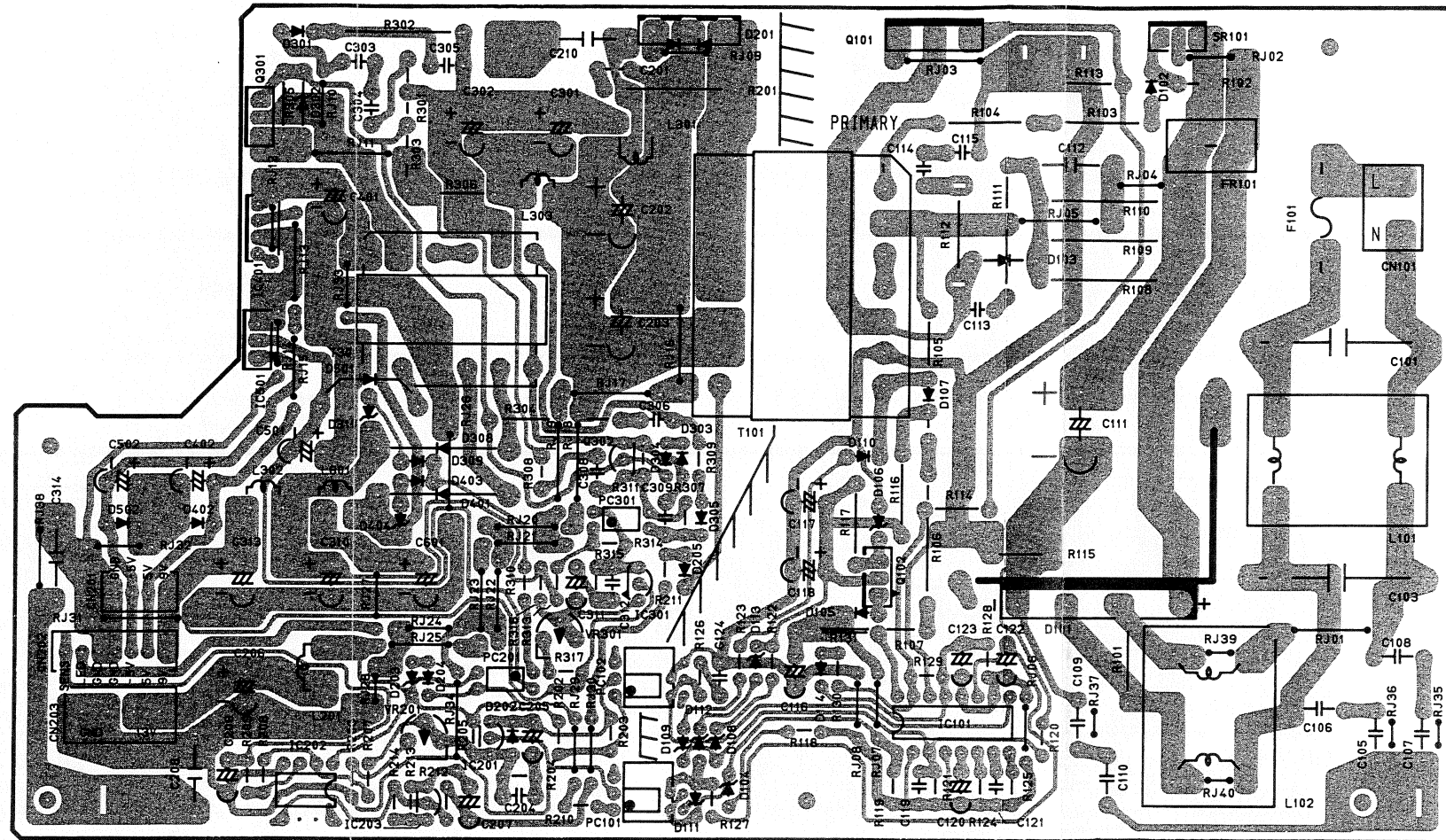


IF-374 BOARD
CCU-M5 (J,UC)
CCU-M5P(EK)
BYCCUM-1F374M

PS BLOCK(POWER BLOCK)



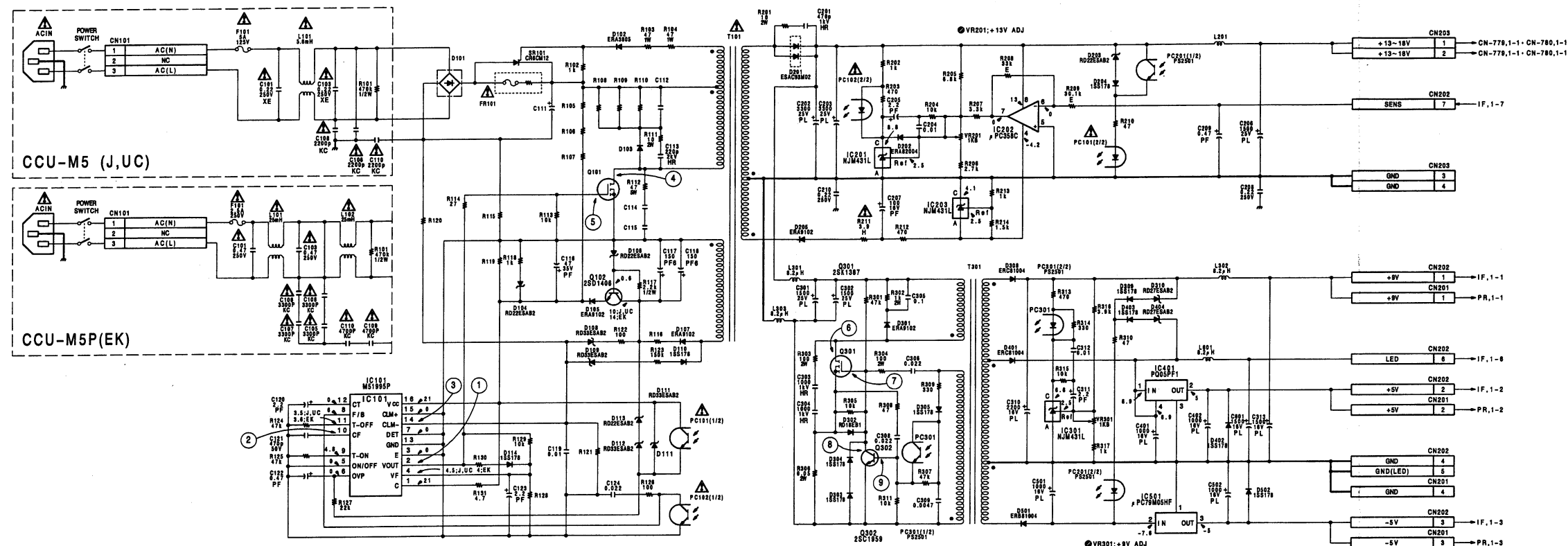
131-A -COMPONENT SIDE-
CCU-M5 (J,UC)
CCU-M5P(EK)



131-A -SOLDER SIDE-
CCU-M5 (J,UC)
CCU-M5P(EK)

SIDE-

PS BLOCK(POWER SUPPLY)

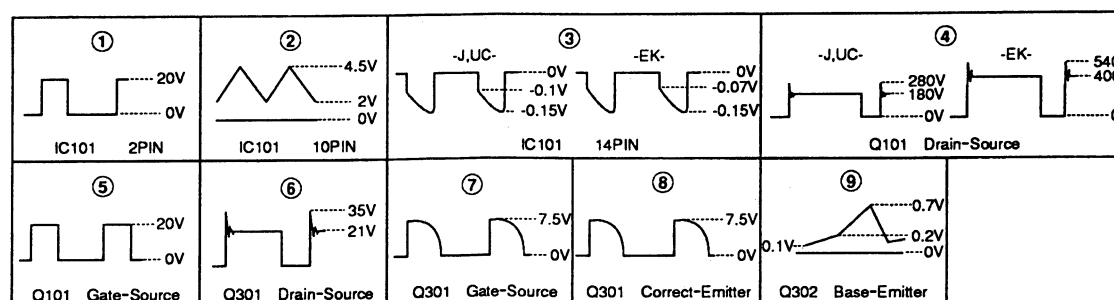


PS BLOCK(POWER SUPPLY)

CCU-M5 (J,UC)
CCU-M5P(EK)

B-YCCUM5-PSBLOCK

Waveforms



注意: △印の部品は安全性を維持するために重要な部品です。
従って交換する時は必ず指定の部品を使って下さい。

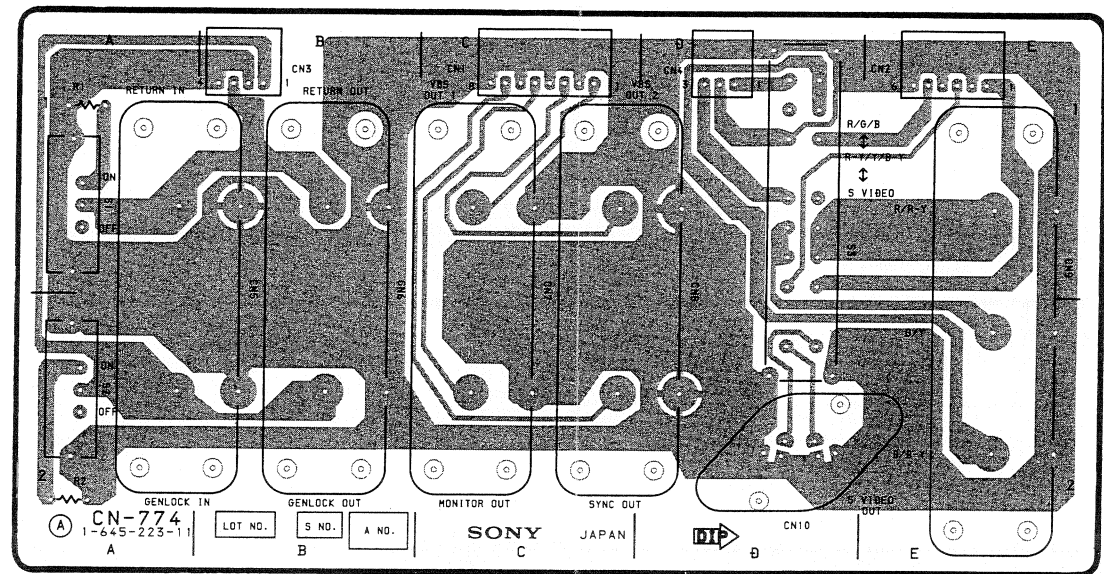
NOTE: △-marked components are critical to safety.
Replace only with same components as specified.

注意: ・Q102に示した電圧は、それぞれQ102のエミッタとの間で測定したDC電圧です。
・IC203に示した電圧は、それぞれIC203のアノードとの間で測定したDC電圧です。

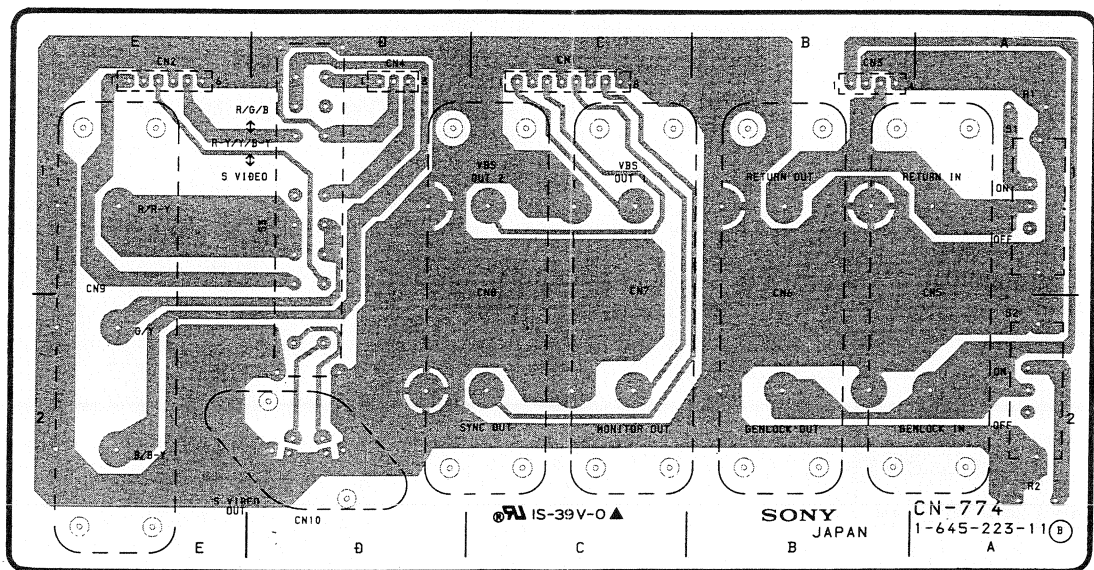
NOTE: ・The voltages shown on Q102 are DC voltages measured between the emitter pin and the pin to be measured.
・The voltages shown on IC203 are DC voltages measured between the anode pin and the pin to be measured.

Ref.	J,UC	EK	Ref.	J,UC	EK
D101	D5SB40	D5SB60	R110	56k,2W	150k,3W
D103	ERB3805	UF4007G23	R115	0.1,2W	0.22,2W
C111	1200,200V 6Q	330,400V	R116	33,1/2W	47,1/2W
C112	0.047,400V	0.022,830V	R119	22k	33k
C114	1000p,1kV HR	470p,1kV	R120	150	100
C116	1000p,1kV HR	470p,1kV	R121	100	66
R105	10k,2W	27k,2W	R128	4.7k	3.3k
R106	10k,2W	27k,2W	R130	3.3k	2.2k
R107	10k,2W	27k,2W	Q101	2SK1016	2SK1082
R108	—	150k,3W	PC101	TLP821GR	PC111B
R109	56k,2W	150k,3W	PC102	TLP821GR	PC111B

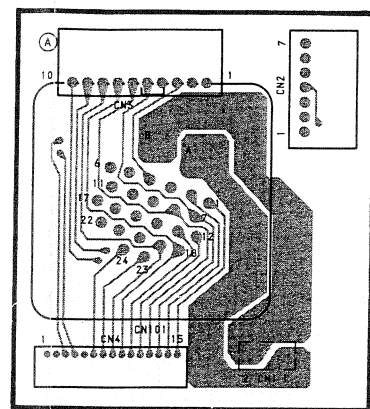
FRAME
 CN-774 BOARD
 CN-779 BOARD
 CN-780 BOARD
 JK-41 BOARD



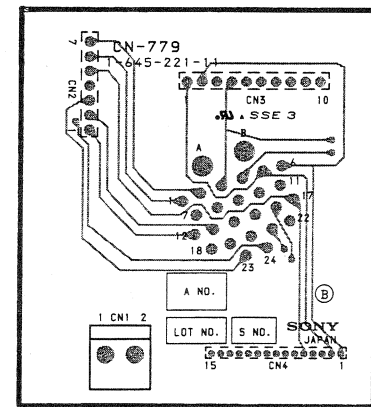
CN-774 -COMPONENT SIDE-
 1-645-223-11
 CCU-M5 (J,UC)
 CCU-M5P(EK)



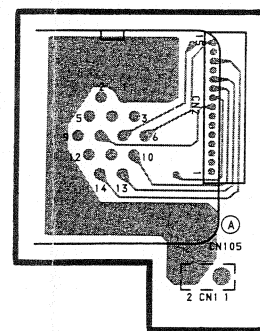
CN-774 -SOLDER SIDE-
 1-645-223-11
 CCU-M5 (J,UC)
 CCU-M5P(EK)



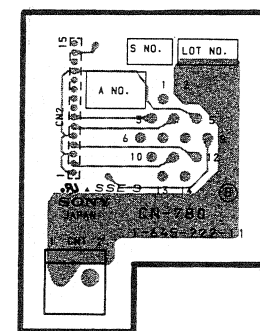
CN-779 -COMPONENT SIDE-
 1-645-221-11
 CCU-M5 (J,UC)
 CCU-M5P(EK)



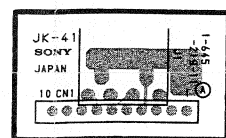
CN-779 -SOLDER SIDE-
 1-645-221-11
 CCU-M5 (J,UC)
 CCU-M5P(EK)



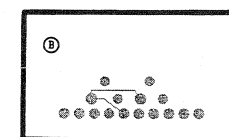
CN-780 -COMPONENT SIDE-
 1-645-222-11
 CCU-M5 (J,UC)
 CCU-M5P(EK)



CN-780 -SOLDER SIDE-
 1-645-222-11
 CCU-M5 (J,UC)
 CCU-M5P(EK)

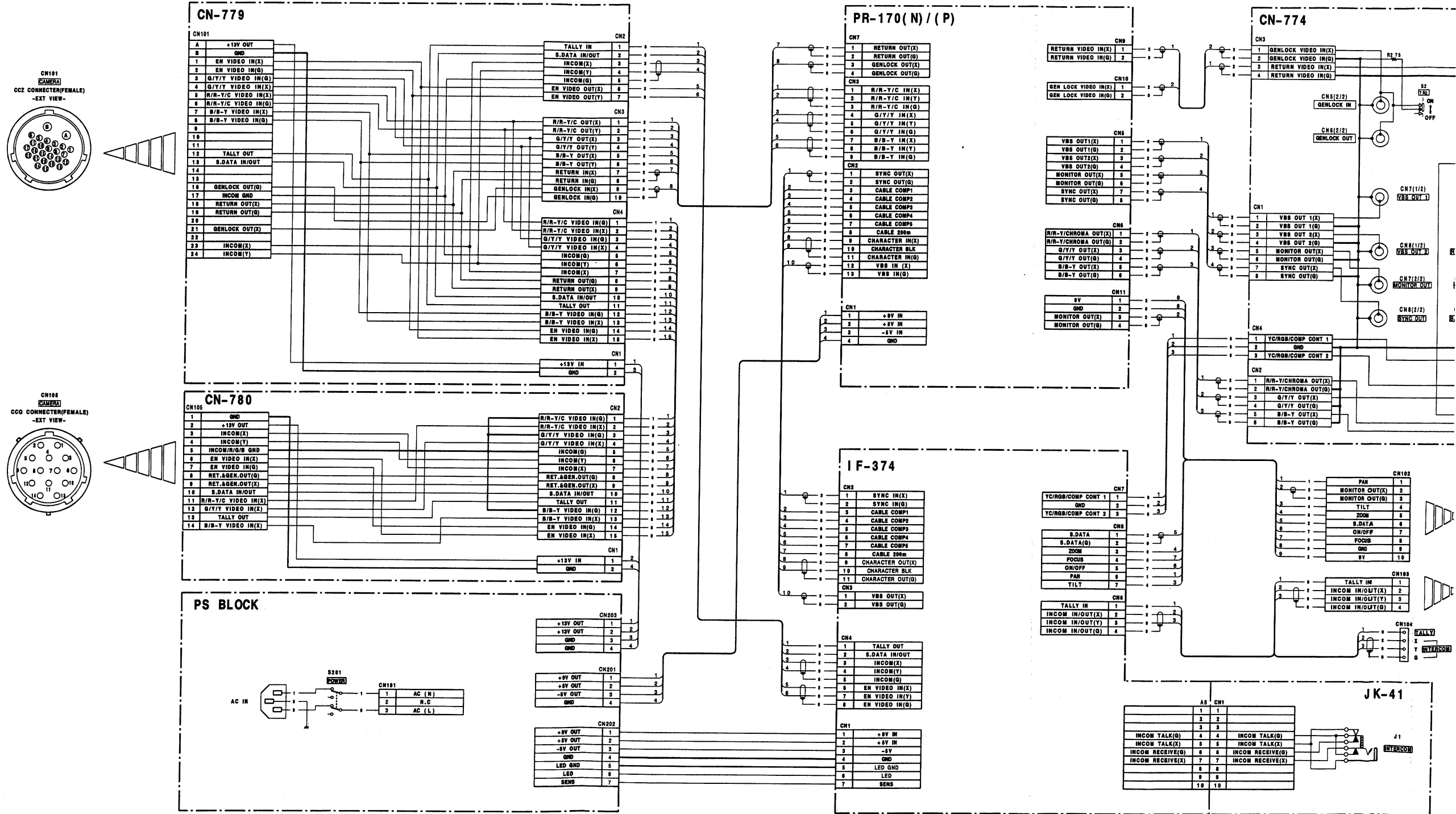


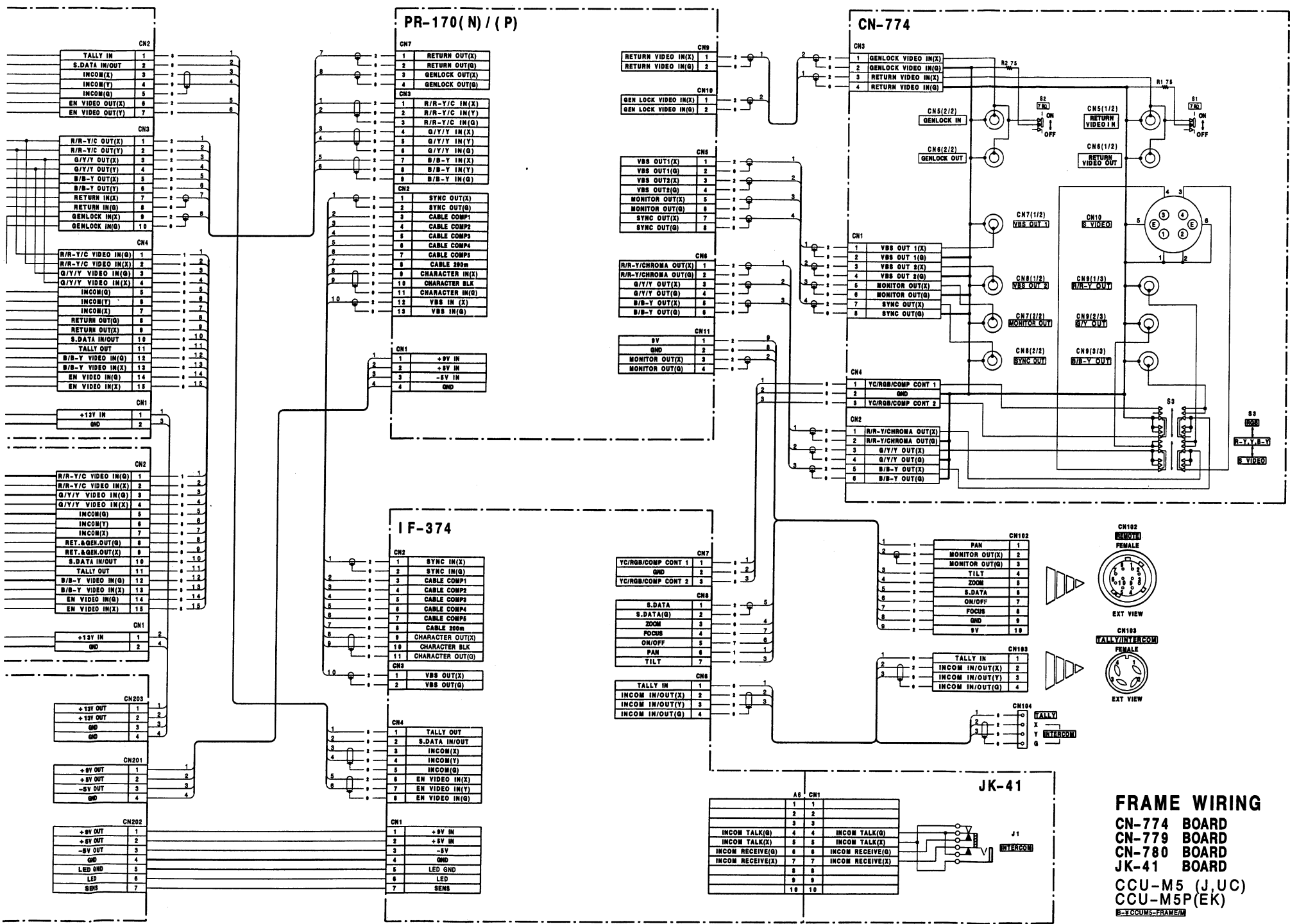
JK-41 -COMPONENT SIDE-
 1-645-219-11
 CCU-M5 (J,UC)
 CCU-M5P(EK)



JK-41 -SOLDER SIDE-
 1-645-219-11
 CCU-M5 (J,UC)
 CCU-M5P(EK)

FRAME





SECTION D

SPARE PARTS

PARTS INFORMATION

1. Safety Related Component Warning

Components identified by shading marked with  on the schematic diagrams, exploded views and electrical spare parts list are critical to safe operation. Replace these components with Sony parts whose parts numbers appear as shown in this manual or in service manual supplements published by Sony.

2. Replacement Parts supplied from Sony Parts Center will sometimes have different shape and outside view from the parts which actually in use. This is due to **"accommodating the improved parts and/or engineering changes"** or **"standardization of genuine parts."** This manual's exploded view and electrical spare parts lists are indicating the parts numbers of "the standardized genuine parts at present." Regarding engineering parts and diagrams changes in our engineering department, refer to SONY service bulletins and service manual supplements.
3. The parts marked with "S" in the SP column of the exploded views and electrical spare parts list are normally required for routine service work. Orders for parts marked with "O" will be processed, but allow for additional delivery time.
4. Item with no parts number and/or no description are not stocked because they are seldom required for routine service.
5. All capacitors are in micro farads unless otherwise specified.
All inductors are in micro henries unless otherwise specified.
All resistors are in ohms.

CHASSIS BLOCK

EXPLODED VIEW

CHASSIS BLOCK

No.	Part No.	SP Description
1	A-8271-638-A o	MOUNTED CIRCUIT BOARD, PR-170(N)(UC)
	A-8271-639-A o	MOUNTED CIRCUIT BOARD, PR-170(P)(EK)
2	X-2355-502-1 s	KNOB ASSY, CONTROL "DETAIL" "KNEE"
		"PED R, B" "GAIN R, B"
3	X-2387-004-1 s	KNOB ASSY "IRIS"
4	X-3166-798-2 o	PANEL ASSY, FRONT
5	X-3166-799-1 s	KNOB ASSY "SHUTTER" "CABLE COMP"
6	X-3651-342-0 s	KNOB ASSY, CONTROL "MASTER PEDESTAL"
7	A1-413-782-11 s	SWITCHING REGULATOR (UC)
	A1-413-783-11 s	SWITCHING REGULATOR (EK)
8	2-249-303-00 o	WINDOW (2), REMOTE CONTROL
9	2-249-304-02 o	FRAME(2), WINDOW, REMOTE CONTROL
10	2-249-307-00 s	INDICATOR, REMOTE
11	2-270-659-00 s	MARKER (B)
12	2-270-660-00 s	MARKER (R)
13	2-381-963-01 o	FOOT, STAND
14	2-381-964-01 o	FOOT
15	3-701-822-00 o	HOLDER, WIRE
16	3-726-946-01 o	COVER
17	7-682-547-04 s	SCREW +B 3X6
18	7-682-548-09 s	SCREW +B 3X8
19	7-682-903-11 s	SCREW +PWH 3X6
20	7-682-947-01 s	SCREW +PSW 3X6

CHASSIS BLOCK

This exploded view diagram illustrates the assembly of a radio receiver chassis. The main components shown are:

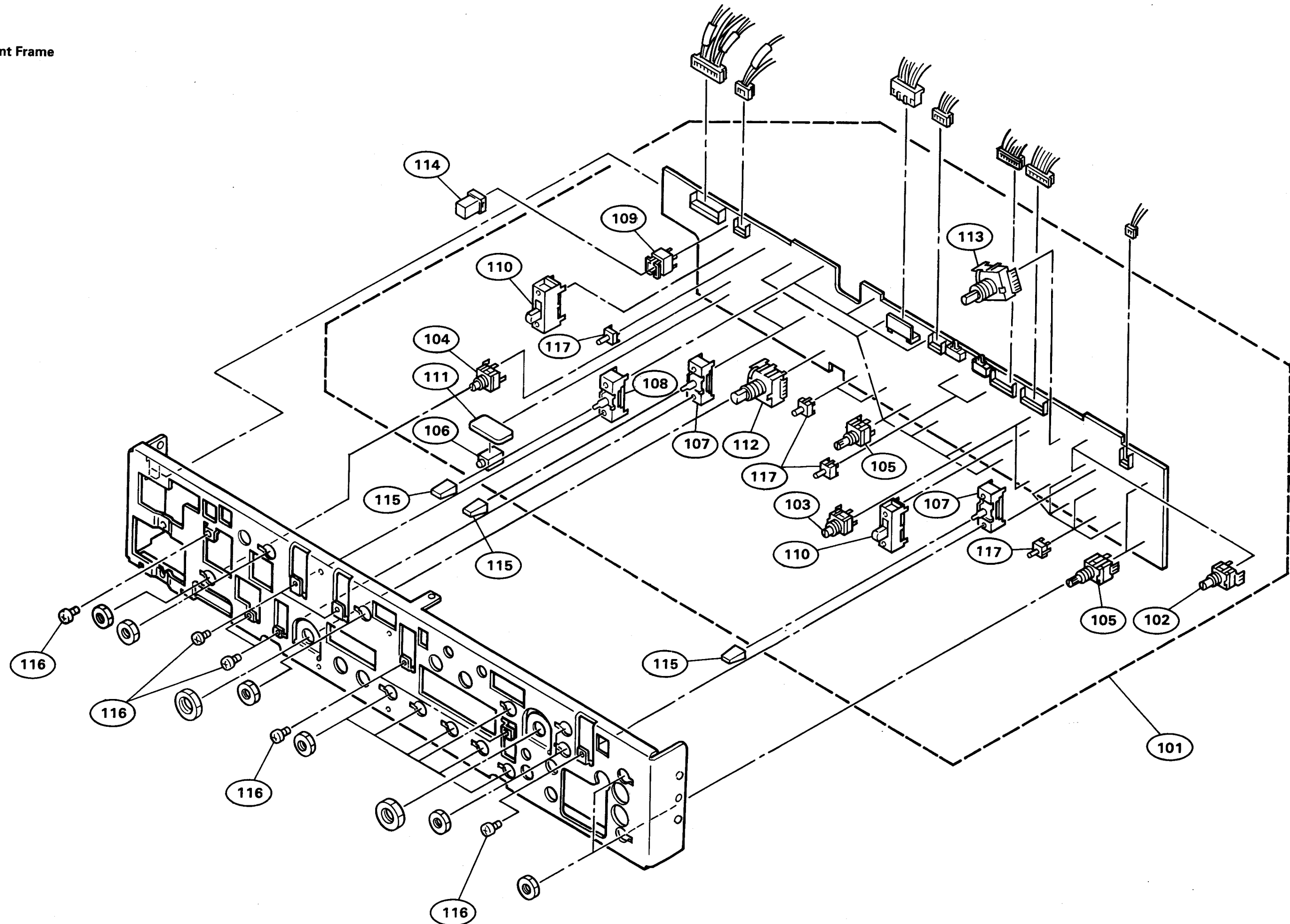
- FRONT FRAME ASS'Y:** The base structure of the receiver, featuring a front panel with various controls and a speaker.
- REAR PANEL ASS'Y:** The back of the receiver, which houses the tuner and other electronic components.
- Chassis Components:** The central electronic components, including the tuner, speaker, and various control elements.

The diagram includes numerous numbered callouts (1-20) and letters (A, B) indicating the specific parts and their assembly points. The front panel features a speaker, a volume knob, and several control buttons. The rear panel includes a tuner and various electronic components. The chassis is shown in an exploded view, allowing for a clear understanding of the assembly process.

D-3

FRONT FRAME FRONT FRAME

Front Frame



D-4

D-4

CCU-M5(UC)
CCU-M5P(EK)

FRONT FRAME

No.	Part No.	SP Description
101	A-8271-637-A	o MOUNTED CIRCUIT BOARD, IF-374
102	1-223-167-11	s RES, VAR, CARBON 1K "CABLE COMP"
103	1-223-168-11	s RES, VAR, CARBON 10K "PHASE"
104	1-223-169-11	s RES, VAR, CARBON 20K "INTERCOM"
105	1-241-874-11	s RES, VAR, CARBON 10K "IRIS" "MASTER PEDESTAL" "GAIN R, B" "PED R, B" "KNEE" "DETAIL"
106	1-507-883-11	s JACK, SMALL TYPE 4P
107	1-516-961-00	s SWITCH, LEVER SLIDE "IRIS MAN/AUTO" "MODE CAMERA/BARS" "SHUTTER ON/OFF"
108	1-516-995-00	s SWITCH, LEVER SLIDE "W/B BALANCE AUTO/PRESET/MANUAL" "KNEE AUTO/PRESET/MANUAL" "GAIN 18dB/9dB/0dB"
109	1-570-101-51	s SWITCH, KEYBOARD "PANEL ACTIVE"
110	1-571-083-21	s SWITCH, SLIDE "PHASE" "LOCK ON/OFF"
111	1-645-219-11	o PRINTED CIRCUIT BOARD, JK-41
112	1-692-268-11	s SWITCH, ROTARY "SHUTTER"
113	1-692-269-11	s SWITCH, ROTARY "CABLE COMP"
114	2-381-934-01	o CAP, SWITCH
115	3-717-382-01	s KNOB, LEVER SW
116	7-621-775-08	s SCREW +B 2.6X3
117	1-570-995-11	s SWITCH, KEYBOARD "AUX" "W/B BALANCE" "SHUTTER" "CALL"

REAR PANEL

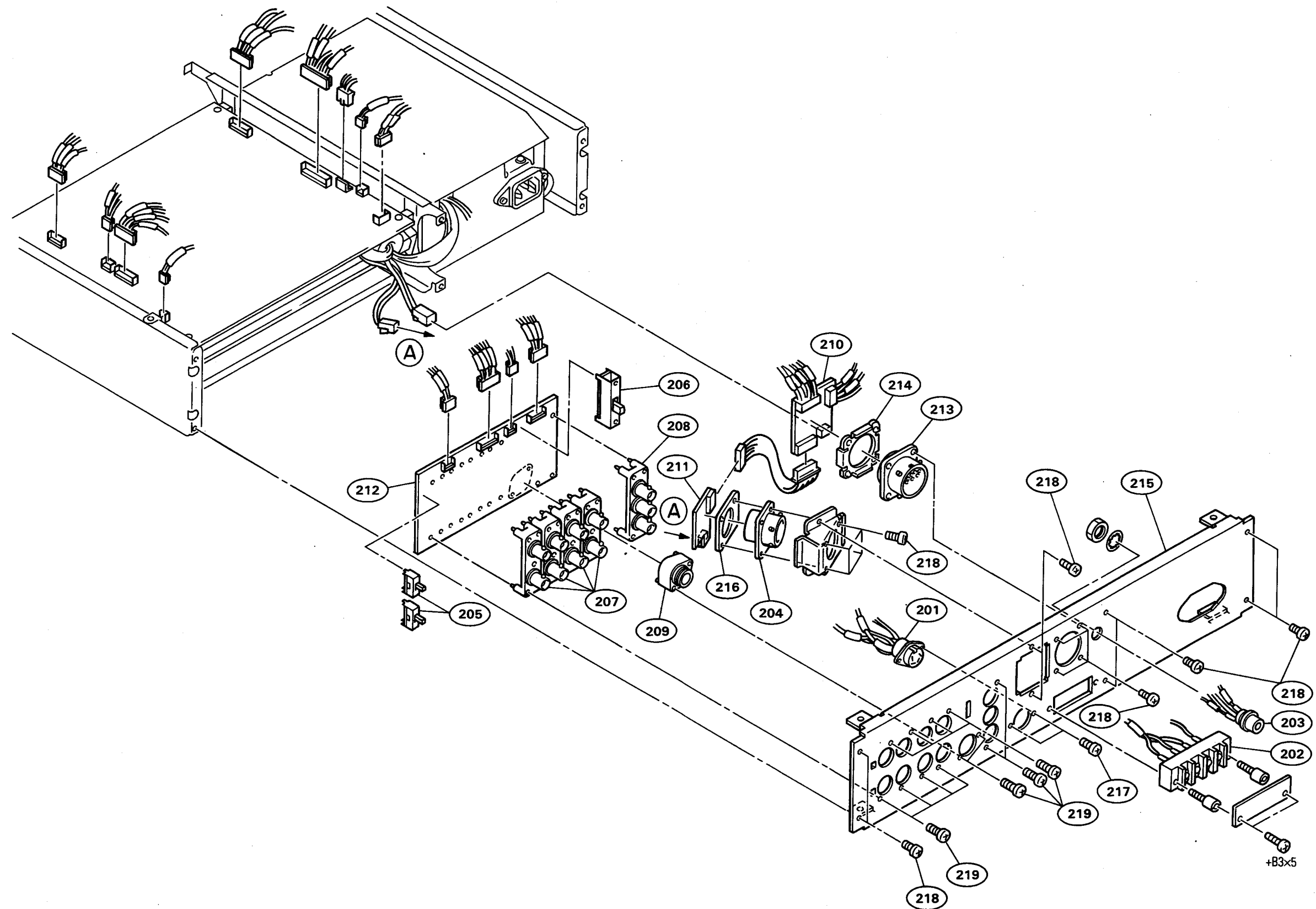
REAR PANEL

No.	Part No.	SP Description
201	1-526-531-00	s SOCKET, DIN 4P, FEMALE "TALLY/INTERCOM"
202	1-537-047-11	o TERMINAL BOARD, FEED-THROUGH
203	1-562-782-21	s CONNECTOR, RECEPTACLE 10P, FEMALE "REMOTE"
204	1-568-179-12	s CONNECTOR, ROUND TYPE 14P, FEMALE "CAMERA"
205	1-570-157-51	s SWITCH, SLIDE
206	1-571-413-11	s SWITCH, SLIDE
207	1-573-580-11	s CONNECTOR, BNC (RECEPTACLE)
208	1-573-584-11	s CONNECTOR, BNC (RECEPTACLE)
209	1-573-590-12	s CONNECTOR, (S) TERMINAL 4P "S VIDEO"
210	1-645-221-11	o PRINTED CIRCUIT BOARD, CN-779
211	1-645-222-11	o PRINTED CIRCUIT BOARD, CN-780
212	1-645-223-11	o PRINTED CIRCUIT BOARD, CN-774
213	1-695-924-11	s CONNECTOR, ROUND TYPE 26P, FEMALE "CAMERA"
214	3-177-434-01	o NUT, PLATE
215	3-177-445-01	o PANEL, REAR
216	3-665-720-00	o PLATE, NUT (14P)
217	7-621-770-87	s SCREW +B 2.6X5
218	7-682-547-04	s SCREW +B 3X6
219	7-685-546-14	s SCREW +BTP 3X8 TYPE2

REAR PANEL

REAR PANEL

Rear Panel



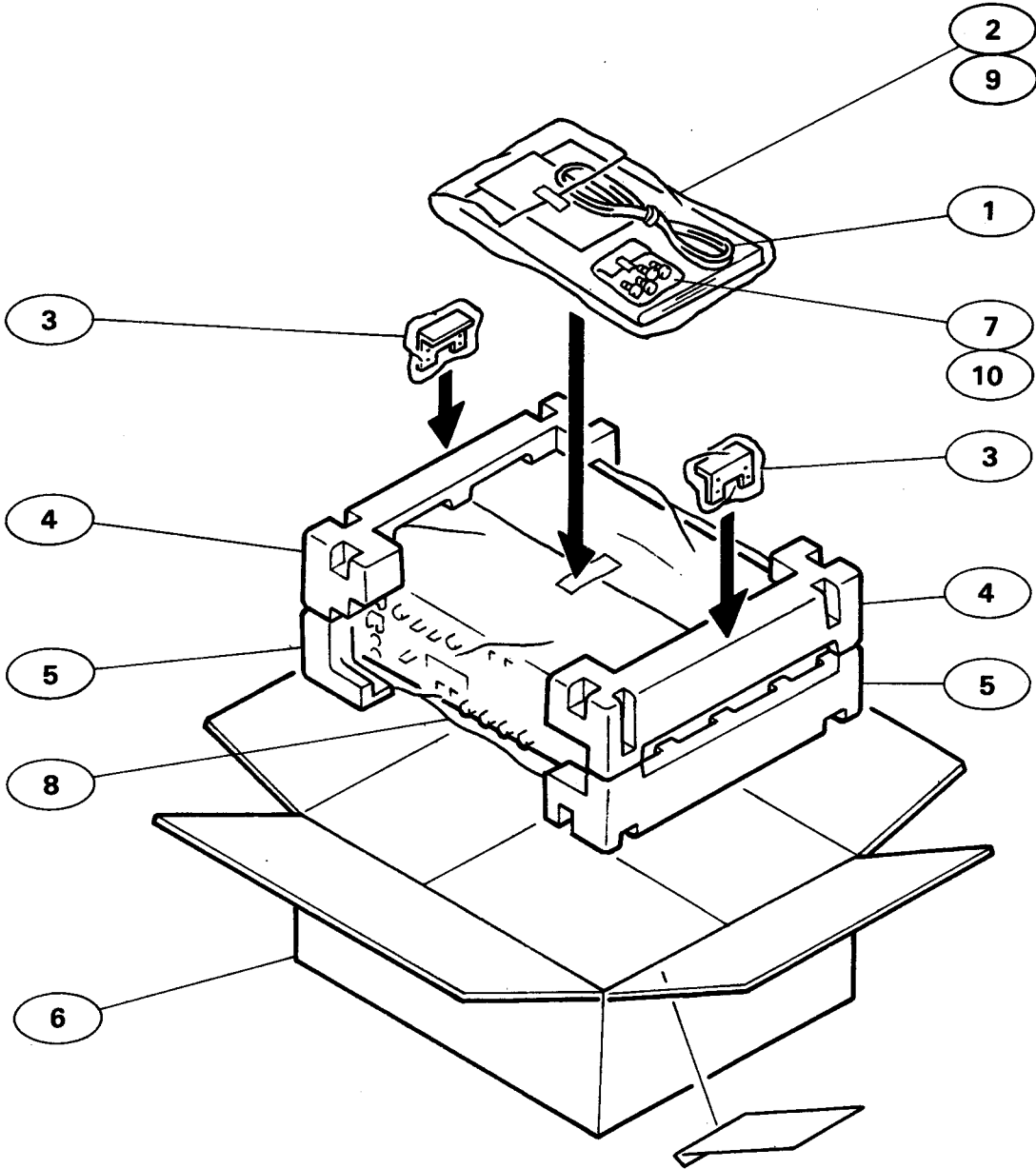
CCU-M5(UC)
CCU-M5P(EK)

D-7

D-7

PACKING MATERIALS AND SUPPLIED ACCESSORY

No.	Part No.	SP Description
1	Δ1-590-910-11	s CORD SET, POWER
2	2-249-307-00	s INDICATOR, REMOTE
3	3-177-648-01	o ANGLE, RACK
4	3-178-529-01	o CUSHION (UPPER)
5	3-178-530-01	o CUSHION (LOWER)
6	3-178-532-01	o INDIVIDUAL CARTON
7	3-701-616-00	s BAG, POLYETHYLENE
8	3-701-640-00	s BAG, POLYETHYLENE
9	Δ3-755-669-12	s MANUAL, INSTRUCTION
	3-755-669-41	s MANUAL, INSTRUCTION
	3-755-669-51	s MANUAL, INSTRUCTION
10	7-682-562-04	s SCREW +B 4X10



ELECTRICAL PARTS LIST

CAPACITOR, CHIP CERAMIC

Part No. SP Description

1-163-083-00	s	CAP, CHIP CERAMIC	1pF	+/-0.25pF	50V
1-163-085-00	s	CAP, CHIP CERAMIC	2pF	+/-0.25pF	50V
1-163-087-00	s	CAP, CHIP CERAMIC	4pF	+/-0.25pF	50V
1-163-089-00	s	CAP, CHIP CERAMIC	6pF	+/-0.5pF	50V
1-163-091-00	s	CAP, CHIP CERAMIC	8pF	+/-0.5pF	50V
1-163-093-00	s	CAP, CHIP CERAMIC	10pF	5%	50V
1-163-097-00	s	CAP, CHIP CERAMIC	15pF	5%	50V
1-163-101-00	s	CAP, CHIP CERAMIC	22pF	5%	50V
1-163-105-00	s	CAP, CHIP CERAMIC	33pF	5%	50V
1-163-109-00	s	CAP, CHIP CERAMIC	47pF	5%	50V
1-163-113-00	s	CAP, CHIP CERAMIC	68pF	5%	50V
1-163-117-00	s	CAP, CHIP CERAMIC	100pF	5%	50V
1-163-121-00	s	CAP, CHIP CERAMIC	150pF	5%	50V
1-163-125-00	s	CAP, CHIP CERAMIC	220pF	5%	50V
1-163-129-00	s	CAP, CHIP CERAMIC	330pF	5%	50V
1-163-133-00	s	CAP, CHIP CERAMIC	470pF	5%	50V
1-163-137-00	s	CAP, CHIP CERAMIC	680pF	5%	50V
1-163-141-00	s	CAP, CHIP CERAMIC	1000pF	5%	50V
1-163-145-00	s	CAP, CHIP CERAMIC	1500pF	10%	50V
1-164-161-11	s	CAP, CHIP CERAMIC	2200pF	10%	100V
1-164-182-11	s	CAP, CHIP CERAMIC	3300pF	10%	100V
1-163-017-00	s	CAP, CHIP CERAMIC	4700pF	10%	50V
1-163-019-00	s	CAP, CHIP CERAMIC	6800pF	10%	50V
1-164-232-11	s	CAP, CHIP CERAMIC	0.01	20%	100V
1-163-023-00	s	CAP, CHIP CERAMIC	0.015	10%	50V
1-163-034-00	s	CAP, CHIP CERAMIC	0.033		50V
1-163-035-00	s	CAP, CHIP CERAMIC	0.047		50V
1-163-036-00	s	CAP, CHIP CERAMIC	0.068		50V
1-163-038-00	s	CAP, CHIP CERAMIC	0.1		50V

RESISTOR, CHIP

Part No. SP Description

1-216-295-00	s	RES, CHIP	0	5%	1/10W
1-216-298-00	s	RES, CHIP	2.2	5%	1/10W
1-216-302-00	s	RES, CHIP	2.7	5%	1/10W
1-216-304-11	s	RES, CHIP	3.3	5%	1/10W
1-216-306-11	s	RES, CHIP	3.9	5%	1/10W
1-216-308-00	s	RES, CHIP	4.7	5%	1/10W
1-216-309-00	s	RES, CHIP	5.6	5%	1/10W
1-216-311-00	s	RES, CHIP	6.8	5%	1/10W
1-216-313-00	s	RES, CHIP	8.2	5%	1/10W
1-216-001-00	s	RES, CHIP	10	5%	1/10W
1-216-003-11	s	RES, CHIP	12	5%	1/10W
1-216-005-00	s	RES, CHIP	15	5%	1/10W
1-216-007-00	s	RES, CHIP	18	5%	1/10W
1-216-009-00	s	RES, CHIP	22	5%	1/10W
1-216-011-00	s	RES, CHIP	27	5%	1/10W
1-216-013-00	s	RES, CHIP	33	5%	1/10W
1-216-015-00	s	RES, CHIP	39	5%	1/10W
1-216-017-00	s	RES, CHIP	47	5%	1/10W
1-216-019-00	s	RES, CHIP	56	5%	1/10W
1-216-021-00	s	RES, CHIP	68	5%	1/10W
1-216-023-00	s	RES, CHIP	82	5%	1/10W
1-216-025-00	s	RES, CHIP	100	5%	1/10W
1-216-027-00	s	RES, CHIP	120	5%	1/10W
1-216-029-00	s	RES, CHIP	150	5%	1/10W
1-216-031-00	s	RES, CHIP	180	5%	1/10W
1-216-033-00	s	RES, CHIP	220	5%	1/10W
1-216-035-00	s	RES, CHIP	270	5%	1/10W
1-216-037-00	s	RES, CHIP	330	5%	1/10W
1-216-039-00	s	RES, CHIP	390	5%	1/10W
1-216-041-00	s	RES, CHIP	470	5%	1/10W
1-216-043-00	s	RES, CHIP	560	5%	1/10W
1-216-045-00	s	RES, CHIP	680	5%	1/10W
1-216-047-00	s	RES, CHIP	820	5%	1/10W
1-216-049-00	s	RES, CHIP	1k	5%	1/10W
1-216-051-00	s	RES, CHIP	1.2k	5%	1/10W
1-216-053-00	s	RES, CHIP	1.5k	5%	1/10W
1-216-055-00	s	RES, CHIP	1.8k	5%	1/10W
1-216-057-00	s	RES, CHIP	2.2k	5%	1/10W
1-216-059-00	s	RES, CHIP	2.7k	5%	1/10W
1-216-061-00	s	RES, CHIP	3.3k	5%	1/10W
1-216-063-00	s	RES, CHIP	3.9k	5%	1/10W
1-216-065-00	s	RES, CHIP	4.7k	5%	1/10W
1-216-067-00	s	RES, CHIP	5.6k	5%	1/10W
1-216-069-00	s	RES, CHIP	6.8k	5%	1/10W
1-216-071-00	s	RES, CHIP	8.2k	5%	1/10W
1-216-073-00	s	RES, CHIP	10k	5%	1/10W
1-216-075-00	s	RES, CHIP	12k	5%	1/10W
1-216-077-00	s	RES, CHIP	15k	5%	1/10W
1-216-079-00	s	RES, CHIP	18k	5%	1/10W
1-216-081-00	s	RES, CHIP	22k	5%	1/10W
1-216-083-00	s	RES, CHIP	27k	5%	1/10W
1-216-085-00	s	RES, CHIP	33k	5%	1/10W
1-216-748-11	s	RES, CHIP	39k	5%	1/10W
1-216-089-00	s	RES, CHIP	47k	5%	1/10W
1-216-091-00	s	RES, CHIP	56k	5%	1/10W

RESISTOR, CHIP

Part No. SP Description

1-216-093-00	s	RES, CHIP	68k	5%	1/10W
1-216-095-00	s	RES, CHIP	82k	5%	1/10W
1-216-097-00	s	RES, CHIP	100k	5%	1/10W
1-216-099-00	s	RES, CHIP	120k	5%	1/10W
1-216-101-00	s	RES, CHIP	150k	5%	1/10W
1-216-103-00	s	RES, CHIP	180k	5%	1/10W
1-216-105-00	s	RES, CHIP	220k	5%	1/10W
1-216-107-00	s	RES, CHIP	270k	5%	1/10W
1-216-109-00	s	RES, CHIP	330k	5%	1/10W
1-216-111-00	s	RES, CHIP	390k	5%	1/10W
1-216-113-00	s	RES, CHIP	470k	5%	1/10W
1-216-115-00	s	RES, CHIP	560k	5%	1/10W
1-216-117-00	s	RES, CHIP	680k	5%	1/10W
1-216-119-00	s	RES, CHIP	820k	5%	1/10W
1-216-121-00	s	RES, CHIP	1.0M	5%	1/10W
1-216-123-11	s	RES, CHIP	1.2M	5%	1/10W
1-216-125-00	s	RES, CHIP	1.5M	5%	1/10W
1-216-127-11	s	RES, CHIP	1.8M	5%	1/10W
1-216-129-00	s	RES, CHIP	2.2M	5%	1/10W
1-216-131-11	s	RES, CHIP	2.7M	5%	1/10W
1-216-133-00	s	RES, CHIP	3.3M	5%	1/10W

----- CN-774 BOARD -----

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-645-223-11	o PRINTED CIRCUIT BOARD, CN-774
CN1	1-506-487-11	o CONNECTOR, 8P, MALE
CN2	1-506-485-11	o CONNECTOR, 6P, MALE
CN3	1-506-483-21	o CONNECTOR, 4P, MALE
CN4	1-506-482-11	o CONNECTOR, 3P, MALE
CN5	1-573-580-11	s CONNECTOR, BNC (RECEPTACLE)
CN6	1-573-580-11	s CONNECTOR, BNC (RECEPTACLE)
CN7	1-573-580-11	s CONNECTOR, BNC (RECEPTACLE)
CN8	1-573-580-11	s CONNECTOR, BNC (RECEPTACLE)
CN9	1-573-584-11	s CONNECTOR, BNC (RECEPTACLE)
CN10	1-573-590-12	s CONNECTOR, (S) TERMINAL 4P
R1	1-215-394-00	s METAL 75 1% 1/6W
R2	1-215-394-00	s METAL 75 1% 1/6W
S1	1-570-157-51	s SWITCH, SLIDE
S2	1-570-157-51	s SWITCH, SLIDE
S3	1-571-413-11	s SWITCH, SLIDE

----- CN-779 BOARD -----

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-645-211-11	o PRINTED CIRCUIT BOARD, CN-779
1pc	3-177-434-01	o NUT, PLATE
CN1	1-564-320-00	s CONNECTOR 2P
CN2	1-506-486-11	o CONNECTOR, 7P, MALE
CN3	1-506-489-11	o CONNECTOR, 10P, MALE
CN4	1-565-162-11	o CONNECTOR, 15P, MALE

----- CN-780 BOARD -----

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-645-222-11	o PRINTED CIRCUIT BOARD, CN-780
1pc	3-665-720-00	o PLATE, NUT (14P)
CN1	1-564-320-00	s CONNECTOR 2P
CN2	1-565-162-11	o CONNECTOR, 15P, MALE

----- IF-374 BOARD -----

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-8271-637-A	o MOUNTED CIRCUIT BOARD, IF-374 (including JK-41 board)
3pcs	2-381-904-00	o HOLDER, LED
4pcs	1-569-090-11	o SOCKET, SIL 12P
C1	1-126-964-71	s ELECT 10uF 20% 50V
C2	1-126-964-71	s ELECT 10uF 20% 50V
C3	1-126-964-71	s ELECT 10uF 20% 50V
C4	1-163-275-11	s CERAMIC, CHIP 0.001uF 5% 50V
C5	1-131-381-00	s TANTALUM 47uF 10% 10V
C6	1-163-239-11	s CERAMIC, CHIP 33PF 5% 50V
C7	1-163-239-11	s CERAMIC, CHIP 33PF 5% 50V
C8	1-131-381-00	s TANTALUM 47uF 10% 10V
C9	1-126-964-71	s ELECT 10uF 20% 50V
C10	1-126-947-11	s ELECT 47uF 20% 35V
C11	1-124-903-11	s ELECT 1uF 20% 50V
C12	1-126-947-11	s ELECT 47uF 20% 35V
C13	1-163-275-11	s CERAMIC, CHIP 0.001uF 5% 50V
C15	1-126-933-11	s ELECT 100uF 20% 16V
C16	1-126-925-11	s ELECT 470uF 20% 10V
C17	1-126-933-11	s ELECT 100uF 20% 16V
C18	1-126-947-11	s ELECT 47uF 20% 35V
C19	1-131-381-00	s TANTALUM 47uF 10% 10V
C20	1-126-924-11	s ELECT 330uF 20% 10V
C21	1-126-924-11	s ELECT 330uF 20% 10V
C22	1-163-275-11	s CERAMIC, CHIP 0.001uF 5% 50V
C24	1-126-925-11	s ELECT 470uF 20% 10V
C25	1-126-966-11	s ELECT 33uF 20% 50V
C26	1-163-217-11	s CERAMIC, CHIP 1PF 0.25PF 50V
C27	1-163-251-11	s CERAMIC, CHIP 100PF 5% 50V
C29	1-163-239-11	s CERAMIC, CHIP 33PF 5% 50V
C30	1-163-243-11	s CERAMIC, CHIP 47PF 5% 50V
C31	1-131-374-00	s TANTALUM 33uF 10% 16V
C34	1-163-235-11	s CERAMIC, CHIP 22PF 5% 50V
C35	1-163-235-11	s CERAMIC, CHIP 22PF 5% 50V
C36	1-163-235-11	s CERAMIC, CHIP 22PF 5% 50V
C37	1-163-235-11	s CERAMIC, CHIP 22PF 5% 50V
C38	1-131-374-00	s TANTALUM 33uF 10% 16V
C55	1-131-381-00	s TANTALUM 47uF 10% 10V
CN1	1-560-619-00	o CONNECTOR, POST HEADER ILC 7P
CN2	1-506-490-21	s CONNECTOR, 11P, MALE
CN3	1-506-481-11	o CONNECTOR, 2P, MALE
CN4	1-506-487-11	o CONNECTOR, 8P, MALE
CN6	1-506-483-21	o CONNECTOR, 4P, MALE
CN7	1-506-482-11	o CONNECTOR, 3P, MALE
CN8	1-506-486-11	o CONNECTOR, 7P, MALE
D3	8-719-822-06	s DIODE TLG206
D4	8-719-822-06	s DIODE TLG206
D5	8-719-028-57	s DIODE LC-204ML
D6	8-719-104-34	s DIODE 1S2836
D7	8-719-157-20	s DIODE RD4.3M-B
D8	8-719-800-76	s DIODE 1SS226
D9	8-719-105-51	s DIODE RD3.6M-B1
D10	8-719-400-18	s DIODE MA152WK
D11	8-719-106-23	s DIODE RD7.5M-B2
D12	8-719-948-09	s DIODE LD-404VR
D14	8-719-400-18	s DIODE MA152WK
D17	8-719-822-06	s DIODE TLG206

Please see pages D-9 and D-10 for the part numbers of capacitors and resistors that are not listed in the parts list.

(IF-374 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
IC1	8-759-009-51	s IC MC14538BF
IC2	8-759-908-17	s IC TL082CPS
IC3	8-759-101-12	s IC UPC311G2
IC4	8-759-009-05	s IC MC14051BF
IC5	8-759-009-05	s IC MC14051BF
IC6	8-759-009-05	s IC MC14051BF
IC7	8-759-009-05	s IC MC14051BF
IC8	8-759-161-97	s IC HD6305Y0E88P

IC9	8-759-052-64	s IC MGM80011AFP
IC10	8-759-234-67	s IC TMP82C79M-2
IC11	8-759-908-17	s IC TL082CPS
IC12	8-759-009-12	s IC MC14071BF
IC13	8-759-009-12	s IC MC14071BF

IC14	8-759-209-15	s IC TC4SU69F
IC15	8-759-925-74	s IC SN74HC04ANS
IC16	8-759-112-72	s IC UPD6142G-101
IC17	8-759-009-05	s IC MC14051BF
IC18	8-759-009-04	s IC MC14050BF

IC19	8-759-300-71	s IC MC14053BF
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L1	1-410-478-11	s INDUCTOR 47uH
L2	1-410-478-11	s INDUCTOR 47uH
L3	1-408-413-00	s INDUCTOR 22uH
L4	1-408-418-00	s INDUCTOR 56uH

Q1	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q2	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q3	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q4	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q5	8-729-120-28	s TRANSISTOR 2SC1623-L5L6

Q6	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q7	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q8	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q9	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q10	8-729-120-28	s TRANSISTOR 2SC1623-L5L6

Q11	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q12	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q13	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q14	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q15	8-729-120-28	s TRANSISTOR 2SC1623-L5L6

Q16	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q17	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q18	8-729-216-22	s TRANSISTOR 2SA1162
Q19	8-729-216-22	s TRANSISTOR 2SA1162
Q20	8-729-120-28	s TRANSISTOR 2SC1623-L5L6

Q21	8-729-216-22	s TRANSISTOR 2SA1162
Q22	8-729-175-72	s TRANSISTOR 2SC2757-T33
Q23	8-729-175-72	s TRANSISTOR 2SC2757-T33
Q24	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q25	8-729-216-22	s TRANSISTOR 2SA1162

Q26	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q27	8-729-216-22	s TRANSISTOR 2SA1162
Q28	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q29	8-729-216-22	s TRANSISTOR 2SA1162
Q30	8-729-120-28	s TRANSISTOR 2SC1623-L5L6

R75	1-216-692-11	s METAL, CHIP 51K 0.5% 1/10W
R77	1-216-646-11	s METAL, CHIP 620 0.5% 1/10W
R86	1-216-624-11	s METAL, CHIP 75 0.5% 1/10W
R105	1-249-390-11	s CARBON 5.6 5% 1/4W

(IF-374 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
R107	1-249-390-11	s CARBON 5.6 5% 1/4W
RB1	1-232-509-00	s COMPOSITION CIRCUIT BLOCK

RV1	1-241-874-11	s RES, VAR, CARBON 10K
RV2	1-241-874-11	s RES, VAR, CARBON 10K
RV3	1-241-874-11	s RES, VAR, CARBON 10K
RV4	1-241-874-11	s RES, VAR, CARBON 10K
RV5	1-241-874-11	s RES, VAR, CARBON 10K

RV6	1-241-874-11	s RES, VAR, CARBON 10K
RV7	1-223-168-11	s RES, VAR, CARBON 10K
RV8	1-223-168-11	s RES, VAR, CARBON 10K
RV9	1-241-874-11	s RES, VAR, CARBON 10K
RV10	1-241-874-11	s RES, VAR, CARBON 10K

RV11	1-223-169-11	s RES, VAR, CARBON 20K
RV12	1-241-261-11	s RES, ADJ, METALT 1K
RV13	1-223-167-11	s RES, VAR, CARBON 1K
RV14	1-223-167-11	s RES, VAR, CARBON 1K

S1	1-516-961-00	s SWITCH, LEVER SLIDE
S2	1-516-995-00	s SWITCH, LEVER SLIDE
S3	1-570-282-21	s SWITCH, KEY BOARD
S4	1-570-282-21	s SWITCH, KEY BOARD
S5	1-516-995-00	s SWITCH, LEVER SLIDE

S6	1-570-101-51	s SWITCH, KEY BOARD
S7	1-571-083-21	s SWITCH, SLIDE
S8	1-516-995-00	s SWITCH, LEVER SLIDE
S9	1-516-961-00	s SWITCH, LEVER SLIDE
S10	1-571-083-21	s SWITCH, SLIDE

S11	1-516-961-00	s SWITCH, LEVER SLIDE
S12	1-571-259-11	s SWITCH, SLIDE
S13	1-571-259-11	s SWITCH, SLIDE
S14	1-570-282-21	s SWITCH, KEY BOARD
S15	1-570-282-21	s SWITCH, KEY BOARD

S16	1-570-282-21	s SWITCH, KEY BOARD
S17	1-692-268-11	s SWITCH, ROTARY
S18	1-570-282-21	s SWITCH, KEY BOARD
S19	1-570-282-21	s SWITCH, KEY BOARD
S20	1-570-282-21	s SWITCH, KEY BOARD

S21	1-570-282-21	s SWITCH, KEY BOARD
S22	1-570-282-21	s SWITCH, KEY BOARD
S23	1-570-282-21	s SWITCH, KEY BOARD
S24	1-692-269-11	s SWITCH, ROTARY

T1	1-427-487-00	s TRANSFORMER, OUTPUT
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X1	1-567-192-11	s RESONATOR, CERAMIC 4.00MHz
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JK-41 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-645-219-11	o PRINTED CIRCUIT BOARD, JK-41
CN1	1-566-095-11	s PIN, BOARD TO BOARD 5P
J1	1-507-883-00	s JACK, SMALL TYPE 4P

Please see pages D-9 and D-10 for the part numbers of capacitors and resistors that are not listed in the parts list.

PR-170P BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-8271-639-A	o MOUNTED CIRCUIT BOARD, PR-170(P)
C1	1-126-947-11	s ELECT 47uF 20% 35V
C3	1-126-157-11	s ELECT 10uF 20% 16V
C4	1-126-157-11	s ELECT 10uF 20% 16V
C5	1-163-243-11	s CERAMIC, CHIP 47PF 5% 50V
C6	1-163-263-11	s CERAMIC, CHIP 330PF 5% 50V
C7	1-126-160-11	s ELECT 1uF 20% 50V
C9	1-163-251-11	s CERAMIC, CHIP 100PF 5% 50V
C10	1-126-157-11	s ELECT 10uF 20% 16V
C11	1-126-966-11	s ELECT 33uF 20% 50V
C12	1-126-157-11	s ELECT 10uF 20% 16V
C13	1-126-157-11	s ELECT 10uF 20% 16V
C14	1-163-239-11	s CERAMIC, CHIP 33PF 5% 50V
C17	1-126-160-11	s ELECT 1uF 20% 50V
C18	1-126-934-11	s ELECT 220uF 20% 16V
C19	1-126-966-11	s ELECT 33uF 20% 50V
C20	1-126-947-11	s ELECT 47uF 20% 35V
C21	1-126-947-11	s ELECT 47uF 20% 35V
C22	1-126-947-11	s ELECT 47uF 20% 35V
C28	1-163-239-11	s CERAMIC, CHIP 33PF 5% 50V
C101	1-126-947-11	s ELECT 47uF 20% 35V
C102	1-126-947-11	s ELECT 47uF 20% 35V
C105	1-126-966-11	s ELECT 33uF 20% 50V
C108	1-163-239-11	s CERAMIC, CHIP 33PF 5% 50V
C110	1-163-239-11	s CERAMIC, CHIP 33PF 5% 50V
C112	1-163-220-11	s CERAMIC, CHIP 3PF 0.25PF 50V
C113	1-163-239-11	s CERAMIC, CHIP 33PF 5% 50V
C115	1-163-239-11	s CERAMIC, CHIP 33PF 5% 50V
C116	1-163-243-11	s CERAMIC, CHIP 47PF 5% 50V
C118	1-163-220-11	s CERAMIC, CHIP 3PF 0.25PF 50V
C119	1-163-239-11	s CERAMIC, CHIP 33PF 5% 50V
C122	1-163-245-11	s CERAMIC, CHIP 56PF 5% 50V
C123	1-126-947-11	s ELECT 47uF 20% 35V
C124	1-126-947-11	s ELECT 47uF 20% 35V
C128	1-126-924-11	s ELECT 330uF 20% 10V
C130	1-126-947-11	s ELECT 47uF 20% 35V
C131	1-126-947-11	s ELECT 47uF 20% 35V
C132	1-126-933-11	s ELECT 100uF 20% 16V
C133	1-163-227-11	s CERAMIC, CHIP 10PF 5% 50V
C134	1-163-239-11	s CERAMIC, CHIP 33PF 5% 50V
C135	1-163-239-11	s CERAMIC, CHIP 33PF 5% 50V
C201	1-126-947-11	s ELECT 47uF 20% 35V
C202	1-126-947-11	s ELECT 47uF 20% 35V
C203	1-163-275-11	s CERAMIC, CHIP 0.001uF 5% 50V
C205	1-126-966-11	s ELECT 33uF 20% 50V
C208	1-163-239-11	s CERAMIC, CHIP 33PF 5% 50V
C209	1-163-235-11	s CERAMIC, CHIP 22PF 5% 50V
C213	1-163-243-11	s CERAMIC, CHIP 47PF 5% 50V
C214	1-163-243-11	s CERAMIC, CHIP 47PF 5% 50V
C215	1-163-237-11	s CERAMIC, CHIP 27PF 5% 50V
C216	1-163-239-11	s CERAMIC, CHIP 33PF 5% 50V
C219	1-163-239-11	s CERAMIC, CHIP 33PF 5% 50V
C222	1-163-243-11	s CERAMIC, CHIP 47PF 5% 50V
C223	1-126-947-11	s ELECT 47uF 20% 35V
C224	1-126-947-11	s ELECT 47uF 20% 35V
C227	1-126-933-11	s ELECT 100uF 20% 16V
C228	1-126-933-11	s ELECT 100uF 20% 16V
C230	1-126-947-11	s ELECT 47uF 20% 35V

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Ref. No. or Q'ty	Part No.	SP Description
C231	1-126-947-11	s ELECT 47uF 20% 35V
C301	1-126-947-11	s ELECT 47uF 20% 35V
C302	1-126-947-11	s ELECT 47uF 20% 35V
C303	1-163-275-11	s CERAMIC, CHIP 0.001uF 5% 50V
C305	1-126-966-11	s ELECT 33uF 20% 50V
C308	1-163-241-11	s CERAMIC, CHIP 39PF 5% 50V
C309	1-163-235-11	s CERAMIC, CHIP 22PF 5% 50V
C313	1-163-243-11	s CERAMIC, CHIP 47PF 5% 50V
C314	1-163-243-11	s CERAMIC, CHIP 47PF 5% 50V
C315	1-163-237-11	s CERAMIC, CHIP 27PF 5% 50V
C316	1-163-239-11	s CERAMIC, CHIP 33PF 5% 50V
C319	1-163-239-11	s CERAMIC, CHIP 33PF 5% 50V
C322	1-163-243-11	s CERAMIC, CHIP 47PF 5% 50V
C323	1-126-947-11	s ELECT 47uF 20% 35V
C324	1-126-947-11	s ELECT 47uF 20% 35V
C327	1-126-933-11	s ELECT 100uF 20% 16V
C328	1-126-933-11	s ELECT 100uF 20% 16V
C330	1-126-947-11	s ELECT 47uF 20% 35V
C331	1-126-947-11	s ELECT 47uF 20% 35V
C401	1-126-947-11	s ELECT 47uF 20% 35V
C402	1-126-947-11	s ELECT 47uF 20% 35V
C403	1-163-275-11	s CERAMIC, CHIP 0.001uF 5% 50V
C405	1-126-966-11	s ELECT 33uF 20% 50V
C408	1-163-239-11	s CERAMIC, CHIP 33PF 5% 50V
C409	1-163-235-11	s CERAMIC, CHIP 22PF 5% 50V
C413	1-163-243-11	s CERAMIC, CHIP 47PF 5% 50V
C414	1-163-243-11	s CERAMIC, CHIP 47PF 5% 50V
C415	1-163-237-11	s CERAMIC, CHIP 27PF 5% 50V
C416	1-163-239-11	s CERAMIC, CHIP 33PF 5% 50V
C419	1-163-239-11	s CERAMIC, CHIP 33PF 5% 50V
C422	1-163-243-11	s CERAMIC, CHIP 47PF 5% 50V
C423	1-126-947-11	s ELECT 47uF 20% 35V
C424	1-126-947-11	s ELECT 47uF 20% 35V
C427	1-126-933-11	s ELECT 100uF 20% 16V
C428	1-126-933-11	s ELECT 100uF 20% 16V
C430	1-126-947-11	s ELECT 47uF 20% 35V
C431	1-126-947-11	s ELECT 47uF 20% 35V
C501	1-126-966-11	s ELECT 33uF 20% 50V
C502	1-124-916-11	s ELECT 22uF 20% 63V
C505	1-124-916-11	s ELECT 22uF 20% 63V
C507	1-126-933-11	s ELECT 100uF 20% 16V
C508	1-163-243-11	s CERAMIC, CHIP 47PF 5% 50V
C509	1-163-243-11	s CERAMIC, CHIP 47PF 5% 50V
C510	1-124-252-00	s ELECT 0.33uF 20% 50V
C511	1-163-243-11	s CERAMIC, CHIP 47PF 5% 50V
C512	1-126-320-11	s ELECT, NONPOLAR 10uF 20% 16V
C514	1-163-251-11	s CERAMIC, CHIP 100PF 5% 50V
C515	1-124-916-11	s ELECT 22uF 20% 63V
C516	1-126-947-11	s ELECT 47uF 20% 35V
C517	1-126-933-11	s ELECT 100uF 20% 16V
C518	1-124-916-11	s ELECT 22uF 20% 63V
C519	1-126-966-11	s ELECT 33uF 20% 50V
C521	1-124-916-11	s ELECT 22uF 20% 63V
C523	1-126-157-11	s ELECT 10uF 20% 16V
C524	1-163-037-11	s CERAMIC, CHIP 0.022uF 10% 25V
C526	1-163-239-11	s CERAMIC, CHIP 33PF 5% 50V
C527	1-163-239-11	s CERAMIC, CHIP 33PF 5% 50V
C532	1-126-157-11	s ELECT 10uF 20% 16V
C533	1-126-966-11	s ELECT 33uF 20% 50V

Please see pages D-9 and D-10 for the part numbers of capacitors and resistors that are not listed in the parts list.

(PR-170P BOARD)

Ref. No. or Q'ty	Part No.	SP Description
C536	1-163-243-11	s CERAMIC, CHIP 47PF 5% 50V
C538	1-126-157-11	s ELECT 10uF 20% 16V
C539	1-126-157-11	s ELECT 10uF 20% 16V
C540	1-124-499-11	s ELECT, NONPOLAR 1uF 20% 50V
C541	1-124-499-11	s ELECT, NONPOLAR 1uF 20% 50V
C542	1-126-923-11	s ELECT 220uF 20% 10V
C543	1-124-916-11	s ELECT 22uF 20% 63V
C545	1-126-966-11	s ELECT 33uF 20% 50V
C547	1-124-916-11	s ELECT 22uF 20% 63V
C551	1-124-916-11	s ELECT 22uF 20% 63V
C553	1-126-966-11	s ELECT 33uF 20% 50V
C557	1-124-916-11	s ELECT 22uF 20% 63V
C561	1-126-966-11	s ELECT 33uF 20% 50V
C564	1-163-251-11	s CERAMIC, CHIP 100PF 5% 50V
C565	1-163-251-11	s CERAMIC, CHIP 100PF 5% 50V
C573	1-163-237-11	s CERAMIC, CHIP 27PF 5% 50V
C578	1-126-966-11	s ELECT 33uF 20% 50V
C580	1-126-157-11	s ELECT 10uF 20% 16V
C581	1-126-157-11	s ELECT 10uF 20% 16V
C582	1-126-157-11	s ELECT 10uF 20% 16V
C583	1-126-947-11	s ELECT 47uF 20% 35V
C584	1-126-933-11	s ELECT 100uF 20% 16V
C585	1-126-966-11	s ELECT 33uF 20% 50V
C589	1-163-243-11	s CERAMIC, CHIP 47PF 5% 50V
C590	1-126-157-11	s ELECT 10uF 20% 16V
C591	1-163-243-11	s CERAMIC, CHIP 47PF 5% 50V
C593	1-126-157-11	s ELECT 10uF 20% 16V
C594	1-126-157-11	s ELECT 10uF 20% 16V
C595	1-163-037-11	s CERAMIC, CHIP 0.022uF 10% 25V
C596	1-163-243-11	s CERAMIC, CHIP 47PF 5% 50V
C597	1-163-243-11	s CERAMIC, CHIP 47PF 5% 50V
C603	1-126-157-11	s ELECT 10uF 20% 16V
C606	1-163-243-11	s CERAMIC, CHIP 47PF 5% 50V
C607	1-126-966-11	s ELECT 33uF 20% 50V
C610	1-126-157-11	s ELECT 10uF 20% 16V
C611	1-124-916-11	s ELECT 22uF 20% 63V
C612	1-124-916-11	s ELECT 22uF 20% 63V
C614	1-126-157-11	s ELECT 10uF 20% 16V
C615	1-126-160-11	s ELECT 1uF 20% 50V
C616	1-126-160-11	s ELECT 1uF 20% 50V
C626	1-126-966-11	s ELECT 33uF 20% 50V
C628	1-126-160-11	s ELECT 1uF 20% 50V
C629	1-163-237-11	s CERAMIC, CHIP 27PF 5% 50V
C630	1-126-157-11	s ELECT 10uF 20% 16V
C631	1-163-243-11	s CERAMIC, CHIP 47PF 5% 50V
C632	1-124-252-00	s ELECT 0.33uF 20% 50V
C633	1-163-239-11	s CERAMIC, CHIP 33PF 5% 50V
C634	1-124-463-00	s ELECT 0.1uF 20% 50V
C635	1-124-463-00	s ELECT 0.1uF 20% 50V
C636	1-126-963-71	s ELECT 4.7uF 20% 50V
C638	1-126-933-11	s ELECT 100uF 20% 16V
C642	1-163-239-11	s CERAMIC, CHIP 33PF 5% 50V
C643	1-163-227-11	s CERAMIC, CHIP 10PF 5% 50V
C644	1-126-966-11	s ELECT 33uF 20% 50V
C646	1-126-966-11	s ELECT 33uF 20% 50V
C648	1-163-251-11	s CERAMIC, CHIP 100PF 5% 50V
C649	1-163-251-11	s CERAMIC, CHIP 100PF 5% 50V
C659	1-163-239-11	s CERAMIC, CHIP 33PF 5% 50V
C660	1-163-235-11	s CERAMIC, CHIP 22PF 5% 50V

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Ref. No. or Q'ty	Part No.	SP Description
C663	1-126-947-11	s ELECT 47uF 20% 35V
C664	1-126-947-11	s ELECT 47uF 20% 35V
C667	1-163-239-11	s CERAMIC, CHIP 33PF 5% 50V
C668	1-163-235-11	s CERAMIC, CHIP 22PF 5% 50V
C674	1-124-916-11	s ELECT 22uF 20% 63V
C677	1-124-916-11	s ELECT 22uF 20% 63V
C679	1-124-916-11	s ELECT 22uF 20% 63V
C700	1-161-051-00	s CERAMIC 0.01uF 10% 50V
C701	1-163-227-11	s CERAMIC, CHIP 10PF 5% 50V
C702	1-163-227-11	s CERAMIC, CHIP 10PF 5% 50V
C703	1-131-374-00	s TANTALUM 33uF 10% 16V
CN1	1-506-703-11	o CONNECTOR POST HEADER, ILG (4P)
CN2	1-506-478-11	o CONNECTOR, 13P, MALE
CN4	1-506-474-11	o CONNECTOR, 9P, MALE
CN5	1-506-473-11	o CONNECTOR, 8P, MALE
CN6	1-506-471-11	o CONNECTOR, 6P, MALE
CN7	1-506-469-11	o CONNECTOR, 4P, MALE
CN9	1-506-467-11	o CONNECTOR, 2P, MALE
CN10	1-506-467-11	o CONNECTOR, 2P, MALE
CN11	1-506-469-11	o CONNECTOR, 4P, MALE
D1	8-719-400-18	s DIODE MA152WK
D4	8-719-400-18	s DIODE MA152WK
D5	8-719-400-18	s DIODE MA152WK
D6	8-719-400-18	s DIODE MA152WK
D103	8-719-157-36	s DIODE RD6.8M-B
D107	8-719-400-18	s DIODE MA152WK
D201	8-719-105-51	s DIODE RD3.6M-B1
D203	8-719-157-36	s DIODE RD6.8M-B
D207	8-719-400-18	s DIODE MA152WK
D301	8-719-105-51	s DIODE RD3.6M-B1
D303	8-719-157-36	s DIODE RD6.8M-B
D307	8-719-400-18	s DIODE MA152WK
D401	8-719-105-51	s DIODE RD3.6M-B1
D403	8-719-157-36	s DIODE RD6.8M-B
D407	8-719-400-18	s DIODE MA152WK
D501	8-719-157-11	s DIODE RD3.3M-B
D502	8-719-400-18	s DIODE MA152WK
D503	8-719-400-18	s DIODE MA152WK
D504	8-719-400-18	s DIODE MA152WK
D505	8-719-400-18	s DIODE MA152WK
D506	8-719-105-38	s DIODE RD3.0M-B1
D508	8-719-400-18	s DIODE MA152WK
D509	8-719-400-18	s DIODE MA152WK
D510	8-719-400-18	s DIODE MA152WK
D511	8-719-400-18	s DIODE MA152WK
D512	8-719-400-18	s DIODE MA152WK
FL1	1-409-322-00	s TRAP 4.43MHz
IC2	8-759-101-12	s IC UPC311G2
IC3	8-759-009-46	s IC TC4528BF
IC4	8-759-101-12	s IC UPC311G2
IC5	8-759-906-53	s IC TL062CPS
IC6	8-759-906-53	s IC TL062CPS
IC7	8-759-906-53	s IC TL062CPS
IC8	8-759-906-53	s IC TL062CPS
IC11	8-759-969-13	s IC SN16913P
IC12	8-759-908-17	s IC TL082CPS
IC13	8-759-906-54	s IC TL064CNS

Please see pages D-9 and D-10 for the part numbers of capacitors and resistors that are not listed in the parts list.

(PR-170P BOARD)

Ref. No. or Q'ty	Part No.	SP Description
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IC14	8-759-969-13	s IC SN16913P
IC15	8-759-969-13	s IC SN16913P
IC16	8-752-006-00	s IC CX20060
IC17	8-759-969-13	s IC SN16913P
IC18	8-759-908-17	s IC TL082CPS

IC19	8-759-009-46	s IC TC4528BF
IC20	8-759-101-12	s IC UPC311G2
IC21	8-759-009-46	s IC TC4528BF
IC22	8-759-009-46	s IC TC4528BF
IC23	8-759-009-46	s IC TC4528BF

IC24	8-759-009-11	s IC MC14070BF
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L1	1-410-478-11	s INDUCTOR 47uH
L2	1-410-478-11	s INDUCTOR 47uH
L3	1-410-478-11	s INDUCTOR 47uH
L4	1-410-476-11	s INDUCTOR 33uH
L8	1-408-418-00	s INDUCTOR 56uH

L9	1-410-478-11	s INDUCTOR 47uH
L10	1-410-478-11	s INDUCTOR 47uH
L101	1-410-478-11	s INDUCTOR 47uH
L102	1-410-478-11	s INDUCTOR 47uH
L103	1-410-478-11	s INDUCTOR 47uH

L104	1-410-478-11	s INDUCTOR 47uH
L105	1-410-478-11	s INDUCTOR 47uH
L106	1-410-478-11	s INDUCTOR 47uH
L201	1-410-478-11	s INDUCTOR 47uH
L202	1-410-478-11	s INDUCTOR 47uH

L203	1-410-478-11	s INDUCTOR 47uH
L204	1-410-478-11	s INDUCTOR 47uH
L301	1-410-478-11	s INDUCTOR 47uH
L302	1-410-478-11	s INDUCTOR 47uH
L303	1-410-478-11	s INDUCTOR 47uH

L304	1-410-478-11	s INDUCTOR 47uH
L401	1-410-478-11	s INDUCTOR 47uH
L402	1-410-478-11	s INDUCTOR 47uH
L403	1-410-478-11	s INDUCTOR 47uH
L404	1-410-478-11	s INDUCTOR 47uH

L501	1-408-413-00	s INDUCTOR 22uH
L502	1-410-482-31	s INDUCTOR 100uH
L503	1-410-463-11	s INDUCTOR 2.7uH
L504	1-410-482-31	s INDUCTOR 100uH
L505	1-410-478-11	s INDUCTOR 47uH

L506	1-408-413-00	s INDUCTOR 22uH
L507	1-410-482-31	s INDUCTOR 100uH
L508	1-408-404-00	s INDUCTOR 3.9uH
L510	1-410-478-11	s INDUCTOR 47uH
L511	1-410-476-11	s INDUCTOR 33uH

L512	1-410-482-31	s INDUCTOR 100uH
L520	1-410-478-11	s INDUCTOR 47uH
L521	1-410-478-11	s INDUCTOR 47uH

LV501	1-407-571-00	s COIL, VAR 22uH
LV502	1-407-572-00	s COIL, VAR 33uH

Q1	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q2	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q3	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q4	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q5	8-729-216-22	s TRANSISTOR 2SA1162

Q6	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
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(PR-170P BOARD)

Ref. No. or Q'ty	Part No.	SP Description
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Q7	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q8	8-729-216-22	s TRANSISTOR 2SA1162
Q9	8-729-175-72	s TRANSISTOR 2SC2757-T33
Q10	8-729-175-72	s TRANSISTOR 2SC2757-T33
Q11	8-729-122-63	s TRANSISTOR 2SA1226

Q12	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q13	8-729-216-22	s TRANSISTOR 2SA1162
Q14	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q15	8-729-216-22	s TRANSISTOR 2SA1162
Q16	8-729-120-28	s TRANSISTOR 2SC1623-L5L6

Q17	8-729-216-22	s TRANSISTOR 2SA1162
Q18	8-729-216-22	s TRANSISTOR 2SA1162
Q19	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q20	8-729-216-22	s TRANSISTOR 2SA1162
Q101	8-729-120-28	s TRANSISTOR 2SC1623-L5L6

Q102	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q103	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q104	8-729-175-72	s TRANSISTOR 2SC2757-T33
Q105	8-729-175-72	s TRANSISTOR 2SC2757-T33
Q106	8-729-122-63	s TRANSISTOR 2SA1226

Q107	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q108	8-729-216-22	s TRANSISTOR 2SA1162
Q109	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q110	8-729-216-22	s TRANSISTOR 2SA1162
Q111	8-729-109-44	s TRANSISTOR 2SK94

Q112	8-729-175-72	s TRANSISTOR 2SC2757-T33
Q113	8-729-175-72	s TRANSISTOR 2SC2757-T33
Q114	8-729-122-63	s TRANSISTOR 2SA1226
Q115	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q116	8-729-216-22	s TRANSISTOR 2SA1162

Q117	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q118	8-729-216-22	s TRANSISTOR 2SA1162
Q119	8-729-109-44	s TRANSISTOR 2SK94
Q120	8-729-109-44	s TRANSISTOR 2SK94
Q121	8-729-175-72	s TRANSISTOR 2SC2757-T33

Q122	8-729-175-72	s TRANSISTOR 2SC2757-T33
Q123	8-729-122-63	s TRANSISTOR 2SA1226
Q124	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q125	8-729-216-22	s TRANSISTOR 2SA1162
Q126	8-729-120-28	s TRANSISTOR 2SC1623-L5L6

Q127	8-729-216-22	s TRANSISTOR 2SA1162
Q128	8-729-109-44	s TRANSISTOR 2SK94
Q129	8-729-109-44	s TRANSISTOR 2SK94
Q130	8-729-175-72	s TRANSISTOR 2SC2757-T33
Q131	8-729-175-72	s TRANSISTOR 2SC2757-T33

Q132	8-729-122-63	s TRANSISTOR 2SA1226
Q133	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q134	8-729-216-22	s TRANSISTOR 2SA1162
Q135	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q136	8-729-216-22	s TRANSISTOR 2SA1162

Q137	8-729-830-33	s TRANSISTOR 2SK303-V4
Q138	8-729-830-33	s TRANSISTOR 2SK303-V4
Q201	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q202	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q203	8-729-120-28	s TRANSISTOR 2SC1623-L5L6

Q204	8-729-175-72	s TRANSISTOR 2SC2757-T33
Q205	8-729-175-72	s TRANSISTOR 2SC2757-T33
Q206	8-729-122-63	s TRANSISTOR 2SA1226
Q207	8-729-120-28	s TRANSISTOR 2SC1623-L5L6

Please see pages D-9 and D-10 for the part numbers of capacitors and resistors that are not listed in the parts list.

(PR-170P BOARD)

Ref. No. or Q'ty	Part No.	SP Description
Q208	8-729-216-22 s	TRANSISTOR 2SA1162
Q209	8-729-120-28 s	TRANSISTOR 2SC1623-L5L6
Q210	8-729-216-22 s	TRANSISTOR 2SA1162
Q211	8-729-109-44 s	TRANSISTOR 2SK94
Q212	8-729-175-72 s	TRANSISTOR 2SC2757-T33
Q213	8-729-175-72 s	TRANSISTOR 2SC2757-T33
Q214	8-729-122-63 s	TRANSISTOR 2SA1226
Q215	8-729-120-28 s	TRANSISTOR 2SC1623-L5L6
Q216	8-729-216-22 s	TRANSISTOR 2SA1162
Q217	8-729-120-28 s	TRANSISTOR 2SC1623-L5L6
Q218	8-729-216-22 s	TRANSISTOR 2SA1162
Q219	8-729-109-44 s	TRANSISTOR 2SK94
Q220	8-729-109-44 s	TRANSISTOR 2SK94
Q221	8-729-175-72 s	TRANSISTOR 2SC2757-T33
Q222	8-729-175-72 s	TRANSISTOR 2SC2757-T33
Q223	8-729-122-63 s	TRANSISTOR 2SA1226
Q224	8-729-120-28 s	TRANSISTOR 2SC1623-L5L6
Q225	8-729-216-22 s	TRANSISTOR 2SA1162
Q226	8-729-120-28 s	TRANSISTOR 2SC1623-L5L6
Q227	8-729-216-22 s	TRANSISTOR 2SA1162
Q228	8-729-109-44 s	TRANSISTOR 2SK94
Q229	8-729-109-44 s	TRANSISTOR 2SK94
Q230	8-729-175-72 s	TRANSISTOR 2SC2757-T33
Q231	8-729-175-72 s	TRANSISTOR 2SC2757-T33
Q232	8-729-122-63 s	TRANSISTOR 2SA1226
Q233	8-729-120-28 s	TRANSISTOR 2SC1623-L5L6
Q234	8-729-216-22 s	TRANSISTOR 2SA1162
Q235	8-729-120-28 s	TRANSISTOR 2SC1623-L5L6
Q236	8-729-216-22 s	TRANSISTOR 2SA1162
Q237	8-729-830-33 s	TRANSISTOR 2SK303-V4
Q238	8-729-830-33 s	TRANSISTOR 2SK303-V4
Q301	8-729-120-28 s	TRANSISTOR 2SC1623-L5L6
Q302	8-729-120-28 s	TRANSISTOR 2SC1623-L5L6
Q303	8-729-120-28 s	TRANSISTOR 2SC1623-L5L6
Q304	8-729-175-72 s	TRANSISTOR 2SC2757-T33
Q305	8-729-175-72 s	TRANSISTOR 2SC2757-T33
Q306	8-729-122-63 s	TRANSISTOR 2SA1226
Q307	8-729-120-28 s	TRANSISTOR 2SC1623-L5L6
Q308	8-729-216-22 s	TRANSISTOR 2SA1162
Q309	8-729-120-28 s	TRANSISTOR 2SC1623-L5L6
Q310	8-729-216-22 s	TRANSISTOR 2SA1162
Q311	8-729-109-44 s	TRANSISTOR 2SK94
Q312	8-729-175-72 s	TRANSISTOR 2SC2757-T33
Q313	8-729-175-72 s	TRANSISTOR 2SC2757-T33
Q314	8-729-122-63 s	TRANSISTOR 2SA1226
Q315	8-729-120-28 s	TRANSISTOR 2SC1623-L5L6
Q316	8-729-216-22 s	TRANSISTOR 2SA1162
Q317	8-729-120-28 s	TRANSISTOR 2SC1623-L5L6
Q318	8-729-216-22 s	TRANSISTOR 2SA1162
Q319	8-729-109-44 s	TRANSISTOR 2SK94
Q320	8-729-109-44 s	TRANSISTOR 2SK94
Q321	8-729-175-72 s	TRANSISTOR 2SC2757-T33
Q322	8-729-175-72 s	TRANSISTOR 2SC2757-T33
Q323	8-729-122-63 s	TRANSISTOR 2SA1226
Q324	8-729-120-28 s	TRANSISTOR 2SC1623-L5L6
Q325	8-729-216-22 s	TRANSISTOR 2SA1162
Q326	8-729-120-28 s	TRANSISTOR 2SC1623-L5L6
Q327	8-729-216-22 s	TRANSISTOR 2SA1162
Q328	8-729-109-44 s	TRANSISTOR 2SK94

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Ref. No. or Q'ty	Part No.	SP Description
Q329	8-729-109-44 s	TRANSISTOR 2SK94
Q330	8-729-175-72 s	TRANSISTOR 2SC2757-T33
Q331	8-729-175-72 s	TRANSISTOR 2SC2757-T33
Q332	8-729-122-63 s	TRANSISTOR 2SA1226
Q333	8-729-120-28 s	TRANSISTOR 2SC1623-L5L6
Q334	8-729-216-22 s	TRANSISTOR 2SA1162
Q335	8-729-120-28 s	TRANSISTOR 2SC1623-L5L6
Q336	8-729-216-22 s	TRANSISTOR 2SA1162
Q337	8-729-830-33 s	TRANSISTOR 2SK303-V4
Q338	8-729-830-33 s	TRANSISTOR 2SK303-V4
Q401	8-729-120-28 s	TRANSISTOR 2SC1623-L5L6
Q402	8-729-120-28 s	TRANSISTOR 2SC1623-L5L6
Q403	8-729-120-28 s	TRANSISTOR 2SC1623-L5L6
Q404	8-729-175-72 s	TRANSISTOR 2SC2757-T33
Q405	8-729-175-72 s	TRANSISTOR 2SC2757-T33
Q406	8-729-122-63 s	TRANSISTOR 2SA1226
Q407	8-729-120-28 s	TRANSISTOR 2SC1623-L5L6
Q408	8-729-216-22 s	TRANSISTOR 2SA1162
Q409	8-729-120-28 s	TRANSISTOR 2SC1623-L5L6
Q410	8-729-216-22 s	TRANSISTOR 2SA1162
Q411	8-729-109-44 s	TRANSISTOR 2SK94
Q412	8-729-175-72 s	TRANSISTOR 2SC2757-T33
Q413	8-729-175-72 s	TRANSISTOR 2SC2757-T33
Q414	8-729-122-63 s	TRANSISTOR 2SA1226
Q415	8-729-120-28 s	TRANSISTOR 2SC1623-L5L6
Q416	8-729-216-22 s	TRANSISTOR 2SA1162
Q417	8-729-120-28 s	TRANSISTOR 2SC1623-L5L6
Q418	8-729-216-22 s	TRANSISTOR 2SA1162
Q419	8-729-109-44 s	TRANSISTOR 2SK94
Q420	8-729-109-44 s	TRANSISTOR 2SK94
Q421	8-729-175-72 s	TRANSISTOR 2SC2757-T33
Q422	8-729-175-72 s	TRANSISTOR 2SC2757-T33
Q423	8-729-122-63 s	TRANSISTOR 2SA1226
Q424	8-729-120-28 s	TRANSISTOR 2SC1623-L5L6
Q425	8-729-216-22 s	TRANSISTOR 2SA1162
Q426	8-729-120-28 s	TRANSISTOR 2SC1623-L5L6
Q427	8-729-216-22 s	TRANSISTOR 2SA1162
Q428	8-729-109-44 s	TRANSISTOR 2SK94
Q429	8-729-109-44 s	TRANSISTOR 2SK94
Q430	8-729-175-72 s	TRANSISTOR 2SC2757-T33
Q431	8-729-175-72 s	TRANSISTOR 2SC2757-T33
Q432	8-729-122-63 s	TRANSISTOR 2SA1226
Q433	8-729-120-28 s	TRANSISTOR 2SC1623-L5L6
Q434	8-729-216-22 s	TRANSISTOR 2SA1162
Q435	8-729-120-28 s	TRANSISTOR 2SC1623-L5L6
Q436	8-729-216-22 s	TRANSISTOR 2SA1162
Q437	8-729-830-33 s	TRANSISTOR 2SK303-V4
Q438	8-729-830-33 s	TRANSISTOR 2SK303-V4
Q501	8-729-120-28 s	TRANSISTOR 2SC1623-L5L6
Q502	8-729-120-28 s	TRANSISTOR 2SC1623-L5L6
Q503	8-729-120-28 s	TRANSISTOR 2SC1623-L5L6
Q504	8-729-216-22 s	TRANSISTOR 2SA1162
Q505	8-729-216-22 s	TRANSISTOR 2SA1162
Q506	8-729-120-28 s	TRANSISTOR 2SC1623-L5L6
Q507	8-729-216-22 s	TRANSISTOR 2SA1162
Q508	8-729-120-28 s	TRANSISTOR 2SC1623-L5L6
Q509	8-729-109-44 s	TRANSISTOR 2SK94
Q510	8-729-120-28 s	TRANSISTOR 2SC1623-L5L6
Q511	8-729-120-28 s	TRANSISTOR 2SC1623-L5L6

Please see pages D-9 and D-10 for the part numbers of capacitors and resistors that are not listed in the parts list.

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Ref. No. or Q'ty	Part No.	SP Description
Q512	8-729-216-22	s TRANSISTOR 2SA1162
Q513	8-729-109-44	s TRANSISTOR 2SK94
Q514	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q515	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q516	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q517	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q518	8-729-109-44	s TRANSISTOR 2SK94
Q519	8-729-216-22	s TRANSISTOR 2SA1162
Q520	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q524	8-729-203-31	s TRANSISTOR 2SJ106-GR
Q525	8-729-109-44	s TRANSISTOR 2SK94
Q526	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q527	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q528	8-729-203-31	s TRANSISTOR 2SJ106-GR
Q529	8-729-109-44	s TRANSISTOR 2SK94
Q530	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q531	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q532	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q533	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q534	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q535	8-729-109-44	s TRANSISTOR 2SK94
Q536	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q546	8-729-109-44	s TRANSISTOR 2SK94
Q547	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q548	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q549	8-729-109-44	s TRANSISTOR 2SK94
Q550	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q551	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q552	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q553	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q554	8-729-109-44	s TRANSISTOR 2SK94
Q555	8-729-216-22	s TRANSISTOR 2SA1162
Q556	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q557	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q558	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q559	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q560	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q561	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q562	8-729-216-22	s TRANSISTOR 2SA1162
Q563	8-729-216-22	s TRANSISTOR 2SA1162
Q564	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q565	8-729-216-22	s TRANSISTOR 2SA1162
Q566	8-729-216-22	s TRANSISTOR 2SA1162
Q567	8-729-175-72	s TRANSISTOR 2SC2757-T33
Q568	8-729-175-72	s TRANSISTOR 2SC2757-T33
Q569	8-729-122-63	s TRANSISTOR 2SA1226
Q570	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q571	8-729-216-22	s TRANSISTOR 2SA1162
Q572	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q573	8-729-216-22	s TRANSISTOR 2SA1162
Q574	8-729-109-44	s TRANSISTOR 2SK94
Q575	8-729-109-44	s TRANSISTOR 2SK94
Q576	8-729-175-72	s TRANSISTOR 2SC2757-T33
Q577	8-729-175-72	s TRANSISTOR 2SC2757-T33
Q578	8-729-122-63	s TRANSISTOR 2SA1226
Q579	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q580	8-729-216-22	s TRANSISTOR 2SA1162
Q581	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
Q582	8-729-216-22	s TRANSISTOR 2SA1162

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Ref. No. or Q'ty	Part No.	SP Description
Q584	8-729-109-44	s TRANSISTOR 2SK94
Q585	8-729-120-28	s TRANSISTOR 2SC1623-L5L6
R10	1-249-390-11	s CARBON 5.6 5% 1/4W
R11	1-249-390-11	s CARBON 5.6 5% 1/4W
R12	1-216-658-11	s METAL, CHIP 2K 0.5% 1/10W
R13	1-216-624-11	s METAL, CHIP 75 0.5% 1/10W
R25	1-216-624-11	s METAL, CHIP 75 0.5% 1/10W
R27	1-249-390-11	s CARBON 5.6 5% 1/4W
R28	1-249-390-11	s CARBON 5.6 5% 1/4W
R47	1-216-692-11	s METAL, CHIP 51K 0.5% 1/10W
R50	1-216-650-11	s METAL, CHIP 910 0.5% 1/10W
R101	1-216-624-11	s METAL, CHIP 75 0.5% 1/10W
R109	1-216-658-11	s METAL, CHIP 2K 0.5% 1/10W
R114	1-249-390-11	s CARBON 5.6 5% 1/4W
R115	1-249-390-11	s CARBON 5.6 5% 1/4W
R119	1-216-642-11	s METAL, CHIP 430 0.5% 1/10W
R125	1-216-658-11	s METAL, CHIP 2K 0.5% 1/10W
R126	1-216-658-11	s METAL, CHIP 2K 0.5% 1/10W
R127	1-216-658-11	s METAL, CHIP 2K 0.5% 1/10W
R133	1-249-390-11	s CARBON 5.6 5% 1/4W
R134	1-249-390-11	s CARBON 5.6 5% 1/4W
R136	1-216-640-11	s METAL, CHIP 360 0.5% 1/10W
R144	1-216-662-11	s METAL, CHIP 3K 0.5% 1/10W
R145	1-216-658-11	s METAL, CHIP 2K 0.5% 1/10W
R151	1-249-390-11	s CARBON 5.6 5% 1/4W
R152	1-249-390-11	s CARBON 5.6 5% 1/4W
R169	1-249-390-11	s CARBON 5.6 5% 1/4W
R170	1-249-390-11	s CARBON 5.6 5% 1/4W
R178	1-216-624-11	s METAL, CHIP 75 0.5% 1/10W
R179	1-216-624-11	s METAL, CHIP 75 0.5% 1/10W
R201	1-216-624-11	s METAL, CHIP 75 0.5% 1/10W
R209	1-216-658-11	s METAL, CHIP 2K 0.5% 1/10W
R214	1-249-390-11	s CARBON 5.6 5% 1/4W
R215	1-249-390-11	s CARBON 5.6 5% 1/4W
R219	1-216-642-11	s METAL, CHIP 430 0.5% 1/10W
R225	1-216-658-11	s METAL, CHIP 2K 0.5% 1/10W
R226	1-216-658-11	s METAL, CHIP 2K 0.5% 1/10W
R233	1-249-390-11	s CARBON 5.6 5% 1/4W
R234	1-249-390-11	s CARBON 5.6 5% 1/4W
R236	1-216-640-11	s METAL, CHIP 360 0.5% 1/10W
R245	1-216-658-11	s METAL, CHIP 2K 0.5% 1/10W
R251	1-249-390-11	s CARBON 5.6 5% 1/4W
R252	1-249-390-11	s CARBON 5.6 5% 1/4W
R269	1-249-390-11	s CARBON 5.6 5% 1/4W
R270	1-249-390-11	s CARBON 5.6 5% 1/4W
R278	1-216-624-11	s METAL, CHIP 75 0.5% 1/10W
R301	1-216-624-11	s METAL, CHIP 75 0.5% 1/10W
R309	1-216-658-11	s METAL, CHIP 2K 0.5% 1/10W
R314	1-249-390-11	s CARBON 5.6 5% 1/4W
R315	1-249-390-11	s CARBON 5.6 5% 1/4W
R319	1-216-642-11	s METAL, CHIP 430 0.5% 1/10W
R325	1-216-658-11	s METAL, CHIP 2K 0.5% 1/10W
R326	1-216-658-11	s METAL, CHIP 2K 0.5% 1/10W
R333	1-249-390-11	s CARBON 5.6 5% 1/4W
R334	1-249-390-11	s CARBON 5.6 5% 1/4W
R336	1-216-640-11	s METAL, CHIP 360 0.5% 1/10W
R345	1-216-658-11	s METAL, CHIP 2K 0.5% 1/10W
R351	1-249-390-11	s CARBON 5.6 5% 1/4W

Please see pages D-9 and D-10 for the part numbers of capacitors and resistors that are not listed in the parts list.

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Ref. No. or Q'ty	Part No.	SP Description
R352	1-249-390-11	s CARBON 5.6 5% 1/4W
R369	1-249-390-11	s CARBON 5.6 5% 1/4W
R370	1-249-390-11	s CARBON 5.6 5% 1/4W
R378	1-216-624-11	s METAL, CHIP 75 0.5% 1/10W
R401	1-216-624-11	s METAL, CHIP 75 0.5% 1/10W
R409	1-216-658-11	s METAL, CHIP 2K 0.5% 1/10W
R414	1-249-390-11	s CARBON 5.6 5% 1/4W
R415	1-249-390-11	s CARBON 5.6 5% 1/4W
R419	1-216-642-11	s METAL, CHIP 430 0.5% 1/10W
R425	1-216-658-11	s METAL, CHIP 2K 0.5% 1/10W
R426	1-216-658-11	s METAL, CHIP 2K 0.5% 1/10W
R433	1-249-390-11	s CARBON 5.6 5% 1/4W
R434	1-249-390-11	s CARBON 5.6 5% 1/4W
R436	1-216-640-11	s METAL, CHIP 360 0.5% 1/10W
R445	1-216-658-11	s METAL, CHIP 2K 0.5% 1/10W
R451	1-249-390-11	s CARBON 5.6 5% 1/4W
R452	1-249-390-11	s CARBON 5.6 5% 1/4W
R469	1-249-390-11	s CARBON 5.6 5% 1/4W
R470	1-249-390-11	s CARBON 5.6 5% 1/4W
R478	1-216-624-11	s METAL, CHIP 75 0.5% 1/10W
R501	1-216-662-11	s METAL, CHIP 3K 0.5% 1/10W
R523	1-216-666-11	s METAL, CHIP 4.3K 0.5% 1/10W
R526	1-216-668-11	s METAL, CHIP 5.1K 0.5% 1/10W
R561	1-216-674-11	s METAL, CHIP 9.1K 0.5% 1/10W
R563	1-216-654-11	s METAL, CHIP 1.3K 0.5% 1/10W
R565	1-216-658-11	s METAL, CHIP 2K 0.5% 1/10W
R572	1-216-670-11	s METAL, CHIP 6.2K 0.5% 1/10W
R575	1-216-640-11	s METAL, CHIP 360 0.5% 1/10W
R598	1-216-694-11	s METAL, CHIP 62K 0.5% 1/10W
R599	1-216-667-11	s METAL, CHIP 4.7K 0.5% 1/10W
R666	1-216-688-11	s METAL, CHIP 36K 0.5% 1/10W
R669	1-216-658-11	s METAL, CHIP 2K 0.5% 1/10W
R674	1-249-390-11	s CARBON 5.6 5% 1/4W
R675	1-249-390-11	s CARBON 5.6 5% 1/4W
R679	1-216-640-11	s METAL, CHIP 360 0.5% 1/10W
R682	1-216-658-11	s METAL, CHIP 2K 0.5% 1/10W
R686	1-216-658-11	s METAL, CHIP 2K 0.5% 1/10W
R691	1-249-390-11	s CARBON 5.6 5% 1/4W
R692	1-249-390-11	s CARBON 5.6 5% 1/4W
R700	1-216-658-11	s METAL, CHIP 2K 0.5% 1/10W
R703	1-216-624-11	s METAL, CHIP 75 0.5% 1/10W
R704	1-216-624-11	s METAL, CHIP 75 0.5% 1/10W
R705	1-216-640-11	s METAL, CHIP 360 0.5% 1/10W
RV101	1-238-011-11	s RES, ADJ, CARBON 470
RV102	1-241-629-11	s RES, ADJ, CARBON 4.7K
RV103	1-241-629-11	s RES, ADJ, CARBON 4.7K
RV104	1-241-629-11	s RES, ADJ, CARBON 4.7K
RV201	1-238-011-11	s RES, ADJ, CARBON 470
RV202	1-241-629-11	s RES, ADJ, CARBON 4.7K
RV203	1-241-630-11	s RES, ADJ, CARBON 10K
RV204	1-241-629-11	s RES, ADJ, CARBON 4.7K
RV301	1-238-011-11	s RES, ADJ, CARBON 470
RV302	1-241-629-11	s RES, ADJ, CARBON 4.7K
RV303	1-241-630-11	s RES, ADJ, CARBON 10K
RV304	1-241-629-11	s RES, ADJ, CARBON 4.7K
RV401	1-238-011-11	s RES, ADJ, CARBON 470
RV402	1-241-629-11	s RES, ADJ, CARBON 4.7K
RV403	1-241-630-11	s RES, ADJ, CARBON 10K

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Ref. No. or Q'ty	Part No.	SP Description
RV404	1-241-629-11	s RES, ADJ, CARBON 4.7K
RV501	1-241-629-11	s RES, ADJ, CARBON 4.7K
RV502	1-241-632-11	s RES, ADJ, CARBON 47K
RV503	1-241-631-11	s RES, ADJ, CARBON 22K
RV504	1-241-631-11	s RES, ADJ, CARBON 22K
RV505	1-241-630-11	s RES, ADJ, CARBON 10K
RV506	1-241-627-11	s RES, ADJ, CARBON 1K
RV507	1-241-631-11	s RES, ADJ, CARBON 22K
RV508	1-241-631-11	s RES, ADJ, CARBON 22K
RV509	1-241-632-11	s RES, ADJ, CARBON 47K
RV510	1-241-631-11	s RES, ADJ, CARBON 22K
RV511	1-241-631-11	s RES, ADJ, CARBON 22K
RV512	1-241-632-11	s RES, ADJ, CARBON 47K
RV515	1-241-629-11	s RES, ADJ, CARBON 4.7K
RV516	1-241-632-11	s RES, ADJ, CARBON 47K
RV517	1-241-628-11	s RES, ADJ, CARBON 2.2K
S1	1-570-331-11	s SWITCH, SLIDE

Please see pages D-9 and D-10 for the part numbers of capacitors and resistors that are not listed in the parts list.

SWITCHING REGULATOR

Ref. No. or Q'ty	Part No.	SP Description
1pc	Δ1-413-783-11	s SWITCHING REGULATOR
2pcs	1-543-870-11	s CORE, RING
1pc	Δ1-570-117-11	s SWITCH, ROCKER (AC POWER)
1pc	Δ1-580-375-21	o INLET 3P
1pc	Δ2-269-962-00	o COVER, SWITCH
2pcs	7-682-548-09	s SCREW +B 3X8
3pcs	7-682-649-09	s SCREW +PS 3X10
1pc	7-682-651-09	s SCREW +PS 3X14
7pcs	7-682-948-01	s SCREW +PSW 3X8
1pc	7-682-661-09	s SCREW +PS 4X8
1pc	9-903-437-01	o PRINTED CIRCUIT BOARD, B
1pc	9-903-366-01	o BRACKET
1pc	9-903-367-01	o BRACKET
1pc	9-903-368-01	o BRACKET
1pc	9-903-369-01	o BRACKET
1pc	Δ9-903-370-01	o HARNESS 1
1pc	9-903-371-01	o HARNESS 2
1pc	9-903-372-01	o HARNESS 3
1pc	9-903-373-01	o HARNESS 4
1pc	9-903-380-01	o TUBE, RADIATION
1pc	9-903-381-01	o TUBE, RADIATION
1pc	9-903-382-01	o SHEET, RADIATION
6pcs	9-903-384-01	o SCREW
1pc	9-903-388-01	o MOUNTED CIRCUIT BOARD
2pcs	9-903-357-01	s HOLDER, FUSE
1pc	9-903-359-01	o PLATE, SHIELD
C101	Δ1-137-110-11	s FILM 0.47uF 20% 250V
C103	Δ1-137-110-11	s FILM 0.47uF 20% 250V
C105	Δ1-162-168-00	s CERAMIC 0.0033uF 10% 400V
C106	Δ1-162-168-00	s CERAMIC 0.0033uF 10% 400V
C107	Δ1-162-168-00	s CERAMIC 0.0033uF 10% 400V
C108	Δ1-162-168-00	s CERAMIC 0.0033uF 10% 400V
C109	Δ1-162-599-12	s CERAMIC 0.0047uF 20% 400V
C110	Δ1-162-599-12	s CERAMIC 0.0047uF 20% 400V
C111	9-903-389-01	s ELECT 330uF 400V
C112	9-903-390-01	s FILM 0.022uF 630V
C113	9-903-317-01	s CERAMIC 220PF 2KV
C114	9-903-392-01	s CERAMIC 470PF 1.0KV
C115	9-903-392-01	s CERAMIC 470PF 1.0KV
C116	9-903-318-01	s ELECT 47uF 35V
C117	9-903-319-01	s ELECT 150uF 50V
C118	9-903-319-01	s ELECT 150uF 50V
C119	9-903-320-01	s FILM 0.01uF 100V
C120	9-903-321-01	s ELECT 2.2uF 50V
C121	9-903-322-01	s CERAMIC 470PF 50V
C122	1-162-726-11	s CERAMIC 470PF 1% 50V
C123	9-903-321-01	s ELECT 2.2uF 50V
C124	9-903-323-01	s FILM 0.022uF 100V
C201	9-903-324-01	s CERAMIC 470PF 1KV
C202	9-903-325-01	s ELECT 3300uF 25V
C203	9-903-325-01	s ELECT 3300uF 25V
C204	9-903-320-01	s FILM 0.01uF 100V
C205	9-903-321-01	s ELECT 2.2uF 50V
C206	1-128-142-11	s ELECT 1500uF 20% 25V
C207	9-903-326-01	s ELECT 100uF 16V

(SWITCHING REGULATOR)

Ref. No. or Q'ty	Part No.	SP Description
C208	9-903-327-01	s FILM 0.22uF 250V
C209	1-162-726-11	s CERAMIC 470PF 1% 50V
C210	9-903-327-01	s FILM 0.22uF 250V
C301	1-128-142-11	s ELECT 1500uF 20% 25V
C302	1-128-142-11	s ELECT 1500uF 20% 25V
C303	1-164-143-11	s CERAMIC 0.001uF 10% 1.0KV
C304	1-164-143-11	s CERAMIC 0.001uF 10% 1.0KV
C305	9-903-328-01	s FILM 0.1uF 100V
C306	9-903-323-01	s FILM 0.022uF 100V
C308	9-903-323-01	s FILM 0.022uF 100V
C309	9-903-329-01	s FILM 0.0047uF 100V
C310	1-128-320-11	s ELECT 2200uF 20% 16V
C311	9-903-321-01	s ELECT 2.2uF 50V
C312	9-903-320-01	s FILM 0.01uF 100V
C313	9-903-330-01	s ELECT 1500uF 16V
C401	9-903-331-01	s ELECT 1000uF 16V
C402	9-903-331-01	s ELECT 1000uF 16V
C501	9-903-331-01	s ELECT 1000uF 16V
C502	9-903-331-01	s ELECT 1000uF 16V
C601	9-903-330-01	s ELECT 1500uF 16V
CN101	Δ1-564-320-00	s CONNECTOR 2P
CN201	1-560-366-00	o CONNECTOR POST HEADER, ILG (4P)
CN202	1-560-619-00	o CONNECTOR, POST HEADER ILG 7P
CN203	1-564-241-00	o CONNECTOR, 4P, MALE
D101	8-719-500-16	s DIODE D5SB60
D102	8-719-970-87	s DIODE ERA38-06
D103	9-903-417-01	s DIODE UF4007G23
D104	9-903-341-01	s DIODE RD22ES-T1-AB2
D105	8-719-031-11	s DIODE ERA91-02V3R
D106	9-903-341-01	s DIODE RD22ES-T1-AB2
D107	8-719-031-11	s DIODE ERA91-02V3R
D108	9-903-342-01	s DIODE RD33ES-T1-AB2
D109	9-903-342-01	s DIODE RD33ES-T1-AB2
D110	8-719-821-31	s DIODE 1SS178-TPA7
D111	9-903-342-01	s DIODE RD33ES-T1-AB2
D112	9-903-342-01	s DIODE RD33ES-T1-AB2
D113	9-903-341-01	s DIODE RD22ES-T1-AB2
D114	8-719-821-31	s DIODE 1SS178-TPA7
D201	9-903-343-01	s DIODE ESAC93M-02
D202	8-719-913-44	s DIODE ERA82-004
D203	9-903-341-01	s DIODE RD22ES-T1-AB2
D204	8-719-821-31	s DIODE 1SS178-TPA7
D205	8-719-031-11	s DIODE ERA91-02V3R
D301	8-719-031-11	s DIODE ERA91-02V3R
D302	8-719-110-49	s DIODE RD18ES-B2
D303	8-719-821-31	s DIODE 1SS178-TPA7
D304	8-719-821-31	s DIODE 1SS178-TPA7
D305	8-719-821-31	s DIODE 1SS178-TPA7
D308	8-719-981-00	s DIODE ERC81-004
D309	8-719-821-31	s DIODE 1SS178-TPA7
D310	9-903-344-01	s DIODE RD13ES-T1-AB2
D401	8-719-981-00	s DIODE ERC81-004
D402	8-719-821-31	s DIODE 1SS178-TPA7
D403	8-719-821-31	s DIODE 1SS178-TPA7
D404	9-903-344-01	s DIODE RD13ES-T1-AB2
D501	9-903-345-01	s DIODE ERB81-004L3
D502	8-719-821-31	s DIODE 1SS178-TPA7

Please see pages D-9 and D-10 for the part numbers of capacitors and resistors that are not listed in the parts list.

(SWITCHING REGULATOR)

Ref. No. or Q'ty	Part No.	SP Description
F101	△9-903-433-01	s FUSE 250V 2.5A
FR101	△9-903-431-01	s FUSE
IC101	9-903-346-01	s IC M51995P
IC201	8-759-711-96	s IC NJM431L
IC202	8-759-135-80	s IC UPC358C
IC203	8-759-711-96	s IC NJM431L
IC301	8-759-711-96	s IC NJM431L
IC401	8-759-504-46	s IC PQ05RF1
IC501	8-759-089-53	s IC UPC79M05HF
L101	△9-903-428-01	s COIL 25mH 1A
L102	△9-903-428-01	s COIL 25mH 1A
L201	9-903-352-01	s COIL
L301	9-903-353-01	s COIL 8.2uH 2.5A
L302	9-903-353-01	s COIL 8.2uH 2.5A
L303	9-903-353-01	s COIL 8.2uH 2.5A
L601	9-903-353-01	s COIL 8.2uH 2.5A
PC101	△9-903-424-01	s PHOTOCOUPLER PC111B
PC102	△9-903-424-01	s PHOTOCOUPLER PC111B
PC201	8-719-161-00	s DIODE PS2501-1-H
PC301	8-719-161-00	s DIODE PS2501-1-H
Q101	9-903-415-01	s TRANSISTOR 2SK1082
Q102	8-729-200-69	s TRANSISTOR 2SD1406
Q301	9-903-340-01	s TRANSISTOR 2SK1387
Q302	1-806-137-21	s TRANSISTOR 2SC1959-Y
R101	9-903-332-01	s CARBON 470K 1/2W
R102	1-249-417-11	s CARBON 1K 5% 1/4W
R103	1-215-861-00	s METAL 47 5% 1W
R104	1-215-861-00	s METAL 47 5% 1W
R105	1-216-465-11	s METAL 27K 5% 2W
R106	1-216-465-11	s METAL 27K 5% 2W
R107	1-216-465-11	s METAL 27K 5% 2W
R108	9-903-408-01	s METAL 150K 3W
R109	9-903-408-01	s METAL 150K 3W
R110	9-903-408-01	s METAL 150K 3W
R111	1-215-880-00	s METAL 10 5% 2W
R112	1-207-682-00	s RES, WIRE 47 10% 6W
R113	1-247-725-11	s CARBON 10K 5% 1/4W
R114	1-247-693-11	s CARBON 27 5% 1/4W
R115	9-903-409-01	s WIREWOUND 0.22 2W
R116	1-247-735-11	s CARBON 47 5% 1/2W
R117	1-247-756-11	s CARBON 2.2K 5% 1/2W
R118	1-249-417-11	s CARBON 1K 5% 1/4W
R119	1-249-435-11	s CARBON 33K 5% 1/4W
R120	1-249-405-11	s CARBON 100 5% 1/4W
R121	1-249-403-11	s CARBON 68 5% 1/4W
R122	1-249-441-11	s CARBON 100K 5% 1/4W
R123	9-903-334-01	s CARBON 150K 1/6W
R124	1-249-437-11	s CARBON 47K 5% 1/4W
R125	1-249-437-11	s CARBON 47K 5% 1/4W
R128	1-249-423-11	s CARBON 3.3K 5% 1/4W
R129	1-249-429-11	s CARBON 10K 5% 1/4W
R130	1-249-421-11	s CARBON 2.2K 5% 1/4W
R131	1-247-693-11	s CARBON 27 5% 1/4W
R201	1-215-880-00	s METAL 10 5% 2W
R202	1-249-417-11	s CARBON 1K 5% 1/4W
R203	1-249-413-11	s CARBON 470 5% 1/4W

(SWITCHING REGULATOR)

Ref. No. or Q'ty	Part No.	SP Description
R204	1-249-429-11	s CARBON 10K 5% 1/4W
R205	1-249-427-11	s CARBON 6.8K 5% 1/4W
R206	1-249-422-11	s CARBON 2.7K 5% 1/4W
R207	1-249-423-11	s CARBON 3.3K 5% 1/4W
R208	9-903-335-01	s METAL 33K 1/6W
R209	9-903-336-01	s METAL 30.1K 1/6W
R210	1-249-401-11	s CARBON 47 5% 1/4W
R211	△9-903-337-01	s RES, FUSIBLE 3.9 1/6W
R212	1-249-413-11	s CARBON 470 5% 1/4W
R213	1-249-417-11	s CARBON 1K 5% 1/4W
R214	1-249-419-11	s CARBON 1.5K 5% 1/4W
R301	1-249-437-11	s CARBON 47K 5% 1/4W
R302	1-215-892-11	s METAL 1K 5% 2W
R303	1-215-886-11	s METAL 100 5% 2W
R304	1-215-886-11	s METAL 100 5% 2W
R305	1-247-725-11	s CARBON 10K 5% 1/4W
R306	9-903-338-01	s WIREWOUND 0.05 2W
R307	1-249-437-11	s CARBON 47K 5% 1/4W
R308	1-249-401-11	s CARBON 47 5% 1/4W
R309	1-249-411-11	s CARBON 330 5% 1/4W
R310	1-249-401-11	s CARBON 47 5% 1/4W
R311	1-249-429-11	s CARBON 10K 5% 1/4W
R313	1-249-413-11	s CARBON 470 5% 1/4W
R314	1-249-411-11	s CARBON 330 5% 1/4W
R315	1-249-429-11	s CARBON 10K 5% 1/4W
R316	1-249-424-11	s CARBON 3.9K 5% 1/4W
R317	1-249-417-11	s CARBON 1K 5% 1/4W
SR101	9-903-348-01	s THYRISTOR CR6CM-12
T101	△9-903-426-01	s TRANSFORMER
T301	9-903-350-01	s TRANSFORMER
VR201	9-903-355-01	s RES, VAR, CARBON 1KB
VR301	9-903-355-01	s RES, VAR, CARBON 1KB

Please see pages D-9 and D-10 for the part numbers of capacitors and resistors that are not listed in the parts list.

FRAME

Ref. No. or Q'ty	Part No.	SP Description
1pc	Δ1-413-783-11	s SWITCHING REGULATOR
CN1F (to CN-774 board)		
	1-569-201-11	o HOUSING, 8P
	1-569-193-11	s CONTACT, FEMALE, AWG24-30
CN2F (to CN-774 board)		
	1-569-199-11	o HOUSING, 6P
	1-569-193-11	s CONTACT, FEMALE, AWG24-30
CN2F (to CN-779 board)		
	1-569-200-11	o HOUSING, 7P
	1-569-193-11	s CONTACT, FEMALE, AWG24-30
CN2F (to CN-780 board)		
	1-565-134-11	o HOUSING, CONNECTOR 15P
	1-565-164-21	o CONTACT, FEMALE AWG26-28
CN2F (to IF-374 board)		
	1-569-204-11	o HOUSING, 11P
	1-569-191-11	o CONTACT, FEMALE, AWG22
CN2F (to PR-170 board)		
	1-569-206-11	o HOUSING, 13P
	1-569-193-11	s CONTACT, FEMALE, AWG24-30
CN3F (to CN-774 board)		
	1-569-197-11	o PLUG HOUSING, 4P
	1-569-191-11	o CONTACT, FEMALE, AWG22
CN3F (to CN-779 board)		
	1-569-203-11	o HOUSING, CONNECTOR 10P
	1-569-193-11	s CONTACT, FEMALE, AWG24-30
CN3F (to IF-374 board)		
	1-569-195-11	o HOUSING, 2P
	1-569-193-11	s CONTACT, FEMALE, AWG24-30
CN3F (to PR-170 board)		
	1-569-202-11	o HOUSING, CONNECTOR 9P
	1-569-191-11	o CONTACT, FEMALE, AWG22
CN4F (to CN-774 board)		
	1-569-196-11	o HOUSING, 3P
	1-569-193-11	s CONTACT, FEMALE, AWG24-30
CN4F (to CN-779 board)		
	1-565-134-11	o HOUSING, CONNECTOR 15P
	1-565-164-21	o CONTACT, FEMALE AWG26-28
CN4F (to IF-374 board)		
	1-569-201-11	o HOUSING, 8P
	1-569-193-11	s CONTACT, FEMALE, AWG24-30
CN5F (to PR-170 board)		
	1-569-201-11	o HOUSING, 8P
	1-569-191-11	o CONTACT, FEMALE, AWG22
CN6F (to IF-374 board)		
	1-569-197-11	o HOUSING, 4P
	1-569-191-11	o CONTACT, FEMALE, AWG22
CN6F (to PR-170 board)		
	1-569-199-11	o HOUSING, 6P
	1-569-191-11	o CONTACT, FEMALE, AWG22
CN7F (to IF-374 board)		
	1-569-196-11	o HOUSING, 3P
	1-569-193-11	s CONTACT, FEMALE, AWG24-30
CN7F (to PR-170 board)		
	1-569-197-11	o PLUG HOUSING, 4P
	1-569-193-11	s CONTACT, FEMALE, AWG24-30
CN8F (to IF-374 board)		
	1-569-200-11	o HOUSING, 7P
	1-569-193-11	s CONTACT, FEMALE, AWG24-30
CN9F (to PR-170 board)		
	1-569-195-41	o HOUSING, 2P
	1-569-193-11	s CONTACT, FEMALE, AWG24-30

Please see pages D-9 and D-10 for the part numbers of capacitors and resistors that are not listed in the parts list.

(FRAME)

Ref. No. or Q'ty	Part No.	SP Description
CN10F (to PR-170 board)		
	1-569-195-11	o HOUSING, 2P
	1-569-193-11	s CONTACT, FEMALE, AWG24-30
CN11F (to PR-170 board)		
	1-569-197-11	o HOUSING, 4P
	1-569-191-11	o CONTACT, FEMALE, AWG22
CN101	1-695-924-11	s CONNECTOR, ROUND TYPE 26P, FEMALE "CAMERA"
CN102	1-562-782-21	s RECEPTACLE, CONNECTOR 10P, FEMALE "REMOTE"
CN103	1-526-531-00	s SOCKET, DIN 4P, FEMALE "TALLY/INTERCOM"
CN104	1-537-047-11	o TERMINAL BOARD, FEED-THROUGH
CN105	1-568-179-12	s CONNECTOR, ROUND TYPE 14P, FEMALE "CAMERA"

CCU-M5P (EK)
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